

The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XXII. No. 567

MAY 10, 1930

Prepaid Annual Subscription:
United Kingdom, £1.1.0; Abroad, £1.1.0

Contents

EDITORIAL NOTES: Dyestuffs Judgment; Medical Patents	PAGE
The Nitrate Merger; Optimism in Trade	431
Medical Patents and Chemotherapeutic Research: Dr. Arnold Renshaw	433
Chemical and Dyestuff Traders' Association	435
The Influence of Technique on Research: Major F. A. Freeth	436
Formaldehyde Condensations with Aromatic Compounds: Prof. G. T. Morgan	438
Unemployment and Work. II: Sir Ernest Benn	439
From Week to Week	441
Patent Literature	442
Weekly Chemical Prices and Market Reports	445
Company News	450
Commercial Intelligence	452

MONTHLY DYESTUFFS SUPPLEMENT: Lord Melchett on the Dyestuffs Industry; Basic Intermediates for Dyestuffs: No. XXXIV, by "Consultant," etc. 27-32

NOTICES.—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders, and Postal Orders should be made payable to Benn Brothers, Ltd.

Benn Brothers, Ltd., proprietors of THE CHEMICAL AGE, have for some years past adopted the five-day week, and the editorial and general offices (Bouverie House, 154, Fleet Street, London, E.C.4), are closed on Saturdays.

Telegrams: "Allangas, Fleet, London."

Telephone: City 0244

The Dyestuffs Judgment to Stand

WE are informed that the I.G. Farbenindustrie have taken no steps, within the period fixed by Mr. Justice Maugham, to enter an appeal against his judgment in the recent dyestuffs patent action, and it may be taken, therefore, that this important and learned judgment stands. This will not greatly surprise those who heard its delivery or have had an opportunity of reading it. One of its strongest features was the detail in which the facts established in evidence were set out and the close relation between these and the conclusions based upon them. It seemed, indeed, as if the acceptance of the findings of fact could lead to no other decision than that at which the learned judge arrived. The German experts, equally with those on the other side, recognised the logical and comprehensive character of the judgment, and they may be said to have obtained some advantage from the judge's clear definition of the conditions that selection patents must comply with.

It may be well to record briefly the claims that Imperial Chemical Industries, as the petitioners, put before the Court. The action concerned three selection patents held by the I.G. Patents 193834 and 193866

were granted originally to Farbwerke Vorm Meister Lucius and Bruning, a German company, for inventions in the manufacture of azo dyestuffs. Patent 199771 was originally granted to A. G. Bloxam for an invention in the manufacture of azo dyestuffs communicated to him from abroad by Chemische Fabrik Griesheim Elecktron of Frankfurt. The first named claimed a process for the manufacture of azo dyestuffs consisting of coupling a diazo compound with an ortho-alkyloxy-anilide of 2:3 oxy-naphthoic acid; the second claimed a process for the manufacture of azo dyestuffs consisting of coupling a diazo compound with a halogenated para-toluidine or para-alkyloxy-anilide of 2:3 oxy-naphthoic acid; the third claimed a process for the manufacture of monoazo dyestuffs consisting of coupling a diazo compound with an ortho-toluidine of 2:3 oxy-naphthoic acid. The specifications, which claimed any azo dyestuffs made by these processes, were selection patents upon inventions disclosed in Patents 6,379 of 1912 and 23,732 of 1913, the monopoly in which expired in March, 1928. The petitioners' case was that these three selection patents extended the expired monopoly in certain processes for the manufacture of azo dyestuffs, particularly in the process of dyeing cotton with azo dyes developed on the fibre, and that they were all invalid.

The judgment was against the I.G. Farbenindustrie on their application to amend, except in one point, and on the general question the Judge held all three selective patents to be invalid. As the result, therefore, of the action taken by Imperial Chemical Industries, certain German restrictions on the manufacture of an important class of dyestuffs are removed, and British dyestuff makers are the gainers by the removal of the monopoly.

On Medical Patents

THE communication from Dr. Arnold Renshaw, of Manchester, published in this issue, on the new proposals relating to medical patents is well worth the attention of all research workers, particularly in the field of chemotherapy. The difficulty of dealing with such patents is well illustrated in the cases of insulin, thyroxine, and Vitamin D, to mention but three. The view of the medical profession is against the issue of medical patents, but that is by no means the chemical attitude, since eminent chemists, including university professors, are among the British patentees of substances used for medical treatment.

The whole subject is very judicially reviewed in the recently published memorandum by a representative joint chemical committee. In this it is pointed out that, to enable full use to be made of the discovery of new medical products, the co-operation of the chemical manufacturer is necessary, and that both the manufacturer and laboratory staffs are entitled to some

suitable protection either by patents or trade marks. The question is complicated by the fact that the refusal to take out a medical patent in this country does not prevent patents from being taken out in other countries, and the British inventor might thus be exploited. The joint chemical committee, on a balance of advantages and disadvantages, favours the appointment of a Medical Patents Trustee, with large discretionary powers, but the committee is emphatic on the point that the abandonment of medical patents should not be adopted until international agreement in the subject is obtained. Dr. Renshaw, as a well-known research worker, puts plainly the case of investigators similarly situated, and his attitude certainly deserves consideration.

The Nitrate Merger

THE details published this week of the fusion of Chilean nitrate interests disclose a very comprehensive scheme of rationalisation, intended to secure three main objects—the unification of the whole industry, more efficient and economical methods of production, and the establishment of an efficient sales organisation throughout world markets. As in the British coal industry, the standards of efficiency and prosperity vary considerably among the existing companies, and the Chilean Government's aim is to eliminate the inefficient and uneconomic concerns or to bring them up to the standard of the more prosperous. There is accordingly to be introduced shortly in the Chilean Congress a Bill for the creation of a national corporation to be known as the Compania Salitrera Nacional (or, in short, "Cosana"). One-half of the stock will be held by the Government; the other half will be issued in exchange for the stocks of the various private companies now operating in Chile, in proportion to the relative values of the properties absorbed.

The capital of the company will amount to £75,000,000, roughly about a million and a half below the issued capital of Imperial Chemical Industries. Half of this will be allotted to the Government, which in return (as we understand the terms, though they are not absolutely clear) will deliver to the national company adequate nitrate reserves, surrender to them undeveloped grounds estimated to contain 150,000,000 tons of nitrate, and cancel the present export duties on nitrate and iodine. It would seem, therefore, that the Government will take its chances with the other companies, with the exception that for the first three years, 1931-32-33, the company will guarantee to the Government an income in the shape of dividends and income tax of £4,500,000, £4,000,000, and £3,500,000 respectively. After 1933 the Government's right to priority treatment will cease, and it will take the ordinary profits on its proportion of shares. The proposed agreement will extend over 60 years, with power of extension. The company will be managed by twelve directors, four to be nominated by the President and the remainder by the absorbed companies.

The scheme recognises, of course, that in view of the competition of synthetic nitrogen producers, some radical reorganisation of the Chilean nitrate industry is imperative, for the future if not for the immediate present, and that the importance of the industry to the Republic itself is such that the Government must

take its full share of responsibility for its future. The more important groups of Chilean producers are understood to be favourable to the scheme, since their own interests are bound up in its success, and the less important can hardly afford to stand outside. With such immense reserves of deposits available, with improved methods of production, and with efficient sales organisation, the end of the natural nitrate industry, if it should ever come about, is removed to a distant future.

Optimism in Trade

THE importance of optimism in business has been often stressed in these columns. A large part of the "slumps" which we hear so much about is undoubtedly created by a pessimistic attitude. If the truth be faced, the saying that "trade is bad" too often means "bad trading." It provides a convenient excuse for want of enterprise and efficiency, whether advanced in the smoke-room of a business club or by a representative who has failed to secure an order. This matter is of particular importance as affecting trade exhibitions. Every progressive business is interested at some time or another in these institutions, whether of local or national interest, or concerned with a particular trade or a group of trades. Successful exhibitions are a vital factor in the prosperity of industry and hence of the country. Their advantage is indicated by the increasing numbers that are now held each year, this fact itself showing that more business does exist and is merely waiting for those who are eager enough to seek it by every means in their power.

Books Received

A TEXT BOOK OF DAIRY CHEMISTRY. By Edgar R. Ling. London: Chapman and Hall, Ltd. Pp. 213. 6s.
 AN INTRODUCTION TO SURFACE CHEMISTRY. By E. K. Rideal. London: Cambridge University Press. Pp. 460. 21s.
 ALCOHOLOMETRY. By Francis G. H. Tate. London: H.M. Stationery Office. Pp. 93. 5s.

The Calendar

May 12	Chemical Industry Club: "Waves and Quanta." Dr. H. Moore. 8 p.m.	2, Whitehall Court, London.
13	Institution of Petroleum Technologists: "Oil Well Deviation." D. P. Rees. 5.30 p.m.	John Street, Adelphi, London.
14	Society of Chemical Industry (Newcastle Section) and Coke Oven Managers' Association: "Cenospheres and the Structure of Coke." Dr. F. S. Sinnatt. "The Formation of Cenospheres as a Means of Studying the Swelling Capacity of Coal." J. H. Carlisle and Dr. F. S. Sinnatt. 7.30 p.m.	Armstrong College, Newcastle-on-Tyne.
14	Institute of Fuel: "The Utilisation of Town's Gas as a Fuel in Heat Treatment Furnaces." Dr. C. M. Walter. 6 p.m.	Burlington House, London.
15	Royal Society. 4.30 p.m.	Burlington House, London.
15	Chemical Society. 8 p.m.	Burlington House, London.
16	Institute of Chemistry (Belfast Section): Annual General Meeting.	Royal Belfast Academical Institution, Edinburgh.
23-24	Institute of Chemistry and Society of Chemical Industry (Edinburgh Sections): "Chemistry in Naval Warfare." Professor Kendall.	

Medical Patents and Chemotherapeutic Research

The Menace to Private Enterprise

In the following correspondence, Dr. Arnold Renshaw, director of the Laboratory of Applied Pathology and Preventive Medicine, Manchester, draws attention to the serious effect that the new proposals concerning medical patents may have on the rights of private research workers, whether chemists or medical men.

To the Editor of THE CHEMICAL AGE.

SIR.—I am interested to see that my colleague, Dr. Malcolm Dyson, has written concerning the contemplated alteration in the present law regarding Medical Patents. I enclose copies of the following for your publication:—(1) A letter to the General Medical Council. (2) Their reply (published with their permission). (3) A letter to the editor of the *British Medical Journal* (the official organ of the British Medical Association) which he has consistently refused to publish unless the General Medical Council's reply was withdrawn from it.

These are of interest to chemists as well as medical men, since the proposed alteration would compel any chemist taking out a patent for the manufacture of a medical substance to "dedicate it to the Patents Trustee"—who would use his discretion as to the remuneration awarded—if any. Thus the *British Medical Journal* (April 19, 1930, column 2, p. 130 of the supplement) states: "Under this system the inventor of a medical preparation, be he medical practitioner or chemist, would, if he resorted to the expedient of patenting, be compelled to dedicate his patent to the British public. He would receive no monetary reward so far as his rights in this country are concerned, but would be entitled to a free licence, other licences being granted by the proposed Medical Patents Trustees for a consideration, such consideration to revert to the trustee and not to the inventor."

It should be clearly understood at the outset that the supreme body in control of medical practice in this country is the General Medical Council and *not* the British Medical Association, the latter resembling in many respects an organised trades union, whereas the former has the sole control of admission to the Medical Register. A storm of protest will surely arise from individual workers in this field when it is sufficiently widely known that chemists and medical men working on these subjects are to have their life work parcelled out by a Government office, with no certain prospect of recompence for time, thought, or money expended.—Yours, etc.,

ARNOLD RENSHAW.

16, St. John Street, Manchester.

Enclosures

I.—FROM DR. RENSHAW TO THE GENERAL MEDICAL COUNCIL, JANUARY 28, 1930:—

Would you kindly inform me what the position is in regard to the following:—

(1) The patenting of any complex chemical process or series of reactions in organic chemistry resulting in the production of any synthetic drug of proved efficiency, in so far as it concerns a medical practitioner co-operating in this field. (I refer more particularly to those compounds which have involved laborious chemical experiments involving heavy expenditure running into several thousands of pounds and numerous animal experiments, such as are necessary nowadays for the production of the more scientific chemotherapeutic compounds having a selective action on certain specific infections only.)

(2) The sale of any rights arising therefrom to a reputable firm of manufacturing chemists known to conduct their business in an approved manner and known to be of the utmost assistance to the medical practitioner.

(3) The registering of any design of apparatus which may be of use in the more technical parts of the medical profession, e.g., in laboratories, the use of which would result in considerable economies.

(4) The position of a medical practitioner in regard to the receipt of royalties from reputable firms who may wish to take up some definite piece of biochemical research in regard to antiseptics, etc., and apply it commercially.

It appears obvious that unless some financial return is possible to pay for the expenditure incurred by a commercial firm or by a medical practitioner who has produced such work, there would be no inducement to undertake such researches, and the field of this work will be left largely to development by people of other nationality.

II.—FROM THE GENERAL MEDICAL COUNCIL TO DR. RENSHAW, JANUARY 31, 1930:—

I have submitted your letter of the 28th January to the President, who directs me to reply as follows:—

(1) The fundamental rule to bear in mind is that, if a medical practitioner discovers a cure or remedy for a disease, he should not retain the information for his own advantage, but should make it available for the public good. Further, the name of the discoverer should not be associated with the article in such a way as to give ground to any suspicion of advertising himself or his qualifications for the purpose of procuring patients. One of the ways of insuring that the article should be properly constituted would be to hand over the formula to some responsible body which had power to supervise the manufacture. For instance, this was done in regard to insulin, the control of which was handed over to the Medical Research Council. *If, however, a practitioner preferred, in order to recoup himself, to patent his discovery and so keep the control of the manufacture in his own hands, it is not probable that objection would be taken provided the article became reasonably accessible for public use.*

(2) Assuming the last mentioned course to be pursued, there is nothing to prevent the rights being sold to a firm of manufacturing chemists.

(3) There is nothing to prevent a registered medical practitioner who has invented a piece of apparatus or a surgical instrument from registering or patenting it, and it is a common practice in matters of this kind for the article to be handed over to a reputable firm of manufacturers to be made and sold, with an arrangement for royalties or something of the kind. In such a matter, where the sale would be only to professional men or other practitioners, there would not be same objection to the name of the inventor being attached to the article.

(4) There is no reason why a medical practitioner should not receive remuneration from reputable firms for doing biochemical or other research work for commercial purposes, but he should be careful to see that no use was made of his name or qualifications for purposes of advertisement.

III.—FROM DR. RENSHAW TO THE "BRITISH MEDICAL JOURNAL," FEBRUARY 28, 1930:—

In the *British Medical Journal* for December 28, 1929, I observe that the British Medical Association is pressing upon the attention of a departmental committee certain suggestions regarding the restriction of so-called medical patents. These restrictions call for comment from those individual research workers who are concerned with the financing of their own research. As a research worker of some twenty years' standing, I may be permitted, I hope, to discuss certain aspects of these suggestions.

Under the scheme propounded the individual worker would in future be compelled to "dedicate" the results of his work to a Medical Patents Trustee who would then decide whether or no any of the funds arising therefrom should be handed to the inventor to recoup his losses or to subsidise further work. The reason given for this is that it is ethically undesirable for medical practitioners conducting research in a medical field to derive financial benefit therefrom. At the same time it is hoped that the provision of such a trustee will stimulate medical research workers in this country to produce results which will prevent the whole of researches in this field being blocked by patents taken out by foreign workers. I can imagine no one act which will place the latter desirable suggestion at a more remote distance.

I speak with the intimate knowledge of the team work and the heavy financial sacrifices which are now necessary for the combined chemical, pathological, pharmacological and clinical investigations which our present attitude towards disease has rendered so necessary in the future. To my mind one of the most desirable events that could occur in the British chemical industry and in the medical profession is for the development of that joint work of which the Germans have shown them-

selves such masters in chemotherapy. I have endeavoured, wherever and whenever possible so to do, to represent to colleagues and directors of chemical concerns in this country the necessity of this co-operation, and not entirely without success.

I strongly disagree with the view that it is not ethical for a medical practitioner to reap financial benefit as the result of his researches. Why not? Is there any difference in the nature of the service to mankind between the associative ideas of the research worker and those of the man who is paid for his labours by the royalties on his book; or between the skill and insight of the laboratory worker and that of the surgeon who for his skill takes a fee? There is no essential difference. If the research worker can by his knowledge and ingenuity add to the sum of human happiness and health why should he not be paid when the administrator of a public health service, who may utilise his results, is paid for so doing? The distinction is not reasonable.

Under this scheme (the Medical Patents Trustee) the individual research worker, financing his own work, will very largely be eliminated, for there can be no guarantee that, however useful his patent, he will receive even his expenses in return. If, to-day, there are medical research workers who are working out of sheer interest in their subject and by their own efforts financing their work in the hope that the results will repay them, it is not to their discredit. I can scarcely think that, of those who have given evidence before the committee which has projected the scheme, there are many individual workers directing their own private laboratories, financed by their own efforts, to enable this work to be done. If the British Medical Association thinks that the profession as a whole objects to all association of medical research with commerce it is hopelessly out of touch with the modern medical point of view.

I for one do not believe that to direct research in a laboratory keeping in view its financial requirements, is unethical or unprofessional, but, on the other hand, the scheme put forward by the council would expose every research worker, financing his own work, to the risk of definite financial loss.

With these facts in my mind, I wrote a letter to the General Medical Council, and, in appending their reply, I would draw your attention to the sentence I have italicised. Compare this sentence with the following extract from a recent memorandum by the British Medical Association:—"The association has considered it desirable to lay down the following general principles:—That it is ethically undesirable for a registered medical practitioner who makes an invention or discovery in the medical field to derive financial benefit from the sale of the rights of such invention or discovery or from royalties for the use of these."

The discrepancy in view between the General Medical Council and the British Medical Association is striking. The latter subscribes to a view which to-day has become outworn: the former recognises—as any responsible body must—that it is perfectly ethical to make research pay for itself instead of paying for research.

I am certain that the profession as a whole will be much better advised to adopt the attitude expressed by the General Medical Council than the unbusinesslike attitude of the British Medical Association. Certainly, if this country has lagged behind in the past with regard to chemotherapeutic endeavour, it will scarcely be stimulated by the methods of suppression of the individual which the council of the British Medical Association proposes to adopt.

New Benn Books

FORTHCOMING publications by Ernest Benn, Ltd., include the following:—*Queen Caroline*, by His Honour Sir Edward Parry, 21s.; *The Death of Yesterday*, by Stephen Graham, 8s. 6d.; *What The Doctor Thought*, by Sir James Crichton-Browne, 7s. 6d.; *Our Father, San Daniel*, by Gabriel Miro, translated by Mrs. Charlotte Remfrey-Kidd, 7s. 6d.; *The Implacable Hunter*, by Mrs. Gwen Davies, 7s. 6d.; *Good Manners and Bad*, by Hugh A. Scott, 10s. 6d.; *Sport in Classic Times*, by A. J. Butler, 16s.; *Commercial Chrysanthemum Culture*, by F. J. Fletcher, 2s. 6d.; *Chats on English China*, by Arthur Hayden, 10s. 6d.; *Siegfried Sassoon* (Augustan Books of Poetry), 6d.; *Ur of the Chaldees*, by C. Leonard Woolley, 7s. 6d.

Chemical Still Dangers

Jury and Board of Trade Regulations

THE death of a chemical worker named Firman in a still at Howards' Chemical Works, Ilford, was attributed by the jury at the inquest on Thursday, May 1, to asphyxia caused by vapours in the still. They added that death would not have occurred had the Board of Trade regulations requiring the wearing of lifebelts been properly carried out and if the manhole of the still had been larger.

Dr. A. Ambrose was the Coroner and Dr. J. Bridge watched the case for the Home Office. Mr. J. Thesiger appeared for Howards and Mr. M. Lyell for Firman's relatives.

It was stated in evidence that Firman was ordered to clean the inside of a still which had been used for the preparation of ethylactate, the ingredients used being lactic acid, benzol, and alcohol. While inside the still Firman collapsed, and, though he had a rope round his armpits held by a fellow-worker, he could not be extricated until part of the still had been cut away.

Method of Cleaning Still

Employees of the firm stated that the still had been standing open, with water inside it, over the Easter holidays. Dr. J. Blagden, head of the research department, explained that the method of cleaning the still, before a man was sent into it, was to boil water in it and draw that off and then to pour cold water in and draw that off. He was of opinion that such treatment would make it impossible for any dangerous gases to remain.

It was admitted by several witnesses that while the manhole, which was of standard size, could be entered by placing the arms correctly it was impossible to pull out an unconscious man even with the aid of a rope.

At the first hearing Dr. William Moreton, who was called to Firman, attributed death to asphyxia, but he could not determine the cause, and he had sent portions of the body and some of the blood for examination. At the resumed hearing he said it had been discovered that there was fat in the muscle of the heart, and death was attributed to that, helped by the exertion of getting into the still and the stuffy atmosphere. There was no trace of poisoning.

Director's Evidence

Mr. Claude Howard, a director of the firm, was questioned regarding the Board of Trade regulation which states, in effect, that before a man is allowed to enter any still where there is reason to apprehend the presence of dangerous gases, the still shall be examined by a responsible person and an entry made in a book to be kept for the purpose. Mr. Howard admitted that no such book was kept and that men did not have lifebelts, as also required by the regulation, because after the steaming operation had been carried out there was no reason to apprehend the presence of dangerous gases. Therefore they did not feel that they came within the regulation, as no person would be sent into a still until the steaming treatment had been carried out.

In summing up, the coroner said that in view of the fact that the still had been standing with water in it for four days, the jury could dismiss from their minds any suggestion that it contained vapours. The effort of going down through a very narrow manhole and the fact of being in a very confined space would throw added labour on the man's heart. If he had been taken out more quickly there would have been a better chance for him. There was on the works an arrangement for lowering men into such places with a strap to go round the wrist so that when pulled up the arm would go up into the right position. The still, he remarked, was not examined properly. Someone put his nose into it and said it was all right. That was certainly not the way to examine it.

Offer to Davy Faraday Laboratory

THE Royal Institution has received and has accepted an offer from the Rockefeller Foundation of £20,000 for the endowment of research in the Davy Faraday Laboratory. It is stipulated, however, that the sum of £50,000 for the same purpose be secured by the Royal Institution from other sources before June 30, 1933, with an additional £1,000 per annum, up to a total of £3,000 for the maintenance of research in the laboratory until the capital payment is made.

Chemical and Dyestuff Traders' Association

Attitude to Key Industries Duties and Dyestuffs Act

The administration of the Key Industries duties, the Dyestuffs Act and a criticism of Government methods of dealing with national finance formed the burden of the address of the Chairman (Mr. A. F. Butler) at the annual meeting of the Chemical and Dyestuff Traders' Association held in London on Tuesday.

THE British Chemical and Dyestuffs Traders' Association, Ltd., held its seventh annual meeting, preceded by a luncheon at the Comedy Restaurant, London, on Tuesday, nearly 90 people being present. Mr. A. F. Butler (chairman) presided and at the outset read a telegram of good wishes from the President (Mr. Victor Blagden) whom illness prevented from attending.

Presenting his annual report, the Chairman said it would be noted that once more the income had approximated to the expenses and they might congratulate themselves that, despite difficult conditions, the Association had continued to pay its way. The President, Mr. Victor Blagden, with unceasing enthusiasm, gave both time and thought to the many matters that had to be dealt with, and they were all very sorry that he was unable to be with them.

The service rendered to members individually by the Association continued to give entire satisfaction. There were two sides to the Association's work. One was assistance to individual firms, chiefly in regard to various trade restrictions and difficulties; the other was, of course, the voicing of the collective opinion of the trade and the increasing endeavour to protect the general interests of the merchants. When members had difficulties with a Government department or doubts as to the position of duties or restrictions on imports or on a hundred and one other matters, they did not hesitate to go to the Association for assistance and information. It had to be a pretty hopeless case or an unanswerable question if they did not get matters straightened out without undue delay. Every firm, whether the largest or smallest, youngest or oldest in the trade, had the same rights and requests for assistance; all received the same careful attention.

Key Industries Duties

An item of importance to all of them was the position of the key industries duties. There had been no attempt during the year under review to widen the scope of this legislation to cover a larger number of industrial products. It would be recalled that during the previous year there was such a movement to contend with. Although the interests concerned met with some little success by getting calcium biphosphate made liable to duty they had not taken any other cases before the Referee. The Association would not hesitate to resist any further attempts to get a wide range of admittedly heavy chemicals included in the dutiable list in the guise of "fine chemicals." Most of the exemption orders lifting the duty from a number of important products continued in operation, being renewed from year to year. In isolated cases attempts had been made to re-impose the duty on the ground that someone or other was considering their manufacture in this country. In this connection it was felt that the Board of Trade gave a good deal more consideration to the prospective manufacturer of the so-called "key" product than to the consuming interests, even although from a commercial point of view the latter were overwhelmingly more important. It was the opinion of the Association that the department rejected applications made by consumers for exemption orders or refused to renew old orders solely on the ground either that someone was considering the manufacture of the product in question or was making a comparatively small quantity, sometimes unsatisfactory in quality. From the employment point of view one might look at it like this. To protect one manufacturer employing probably not more than two or three hands on that particular process, the Board of Trade jeopardised the employment of as many hundred workmen in the consuming industries. In at least one instance an industry that was struggling against foreign competition and meeting it with difficulty was threatened with the additional handicap of having to pay duty on its raw material, simply because one firm in this country might make it at some time or other in the future. The consuming industry employed hundreds of hands while at the most the

process of manufacture of the product in question would entail the employment of but a negligible number of additional workers. While it was not news to them, as chemical merchants, that the Board of Trade gave scant consideration to their interests, it was disturbing to find that in order to cultivate the production of any one so-called "key" product in this country, they were quite willing to cripple, if not totally destroy, an important industry that had been built up quite recently and was meeting foreign competition and doing so without bureaucratic aid.

Negotiations with Customs

In connection with the administration of the Key Industries duties the department with which they had, as in past years, carried on almost continuous negotiations was H.M. Customs and Excise. It had, he could state from his own experience as chairman, been no easy matter to maintain the interests of the trader as regards import values and the general basis on which duty was paid. Those of them who imported dutiable products had no doubt experienced these difficulties. He referred to the persistent attempts that had been, and were still being, made to move the basis of duty from the c.i.f. value of goods to that of the price ruling in this country. Possibly, it would be unfair to place all the blame for this interpretation of the Act on the department in question, but wherever the idea originated and whoever was behind it, it was a matter of the first importance to them all. Let me assure you, added Mr. Butler, we shall challenge every instance brought to our notice as we have done throughout, where Customs endeavour to ignore a fair c.i.f. invoice value and to demand in its place duty on a value that has been based largely on prices that may be quoted by home makers.

It was to be regretted that both the Government departments concerned with the key industry duties, the Board of Trade and Customs, appeared to deem it their duty to interpret this legislation in a way that was invariably against the trader. Thanks to the Association they did not have things entirely their own way. He had made no comment so far on the future of this legislation. They were told by the Chancellor of the Exchequer that it would not be renewed upon expiry, but expiry meant August 1936, which was a distant date. There was not, he thought, much prospect of any change in the immediate future, but the whole subject must come up long before 1936 and at the proper time the Association would be there.

The Dyestuffs Act

Turning to the Dyestuffs Act, the period of ten years for which this legislation was introduced would expire in January. The unsatisfactory manner in which this prohibition of imports had been operated had been dealt with in past reports, principally in reference to confidential trade information, which the Licensing Committee demanded, being passed on to opposing commercial interests. In that respect at least this legislation had been used to secure particulars of the merchants' business and connections for the benefit of competitors. No form of trade restriction was more vicious in its effect than a system of imports by licence, and this Act was no exception. For ten years the whole trade in colours had been at the mercy of a committee which was neither representative nor disinterested; which had decided behind closed doors who were, and who were not, to be granted licences.

Those of them who were directly interested in aniline colours knew to their cost that this committee had throughout operated in a manner definitely opposed to the merchant's rights and interests. It had been the consistent policy of the Board of Trade to support and approve the actions of this committee. At the moment it seemed likely that the Act would be allowed to lapse. The Council was giving its attention to this matter and would report all information in the usual way.

In a brief reference to the Budget the Chairman said they who were in business, knew that it was impossible successfully to carry on without conforming to the first essential rule of keeping expenses within the limit of income. It was really amazing to find that the Government of the day, in dealing with national finance, reversed this basic order of things. He referred to the further increase in direct taxation, which must mean that still more millions would be withdrawn from capital that would otherwise be available for commercial enterprise, which in its turn, must increase unemployment. It was time for this nation to economise in order to give some relief to industry and thereby help it forward, and not, as had happened in this instance, to push it further down the hill of depression. Tariffs, import prohibitions, subsidies or doles would never compensate the worker for the restriction and diversion of trade due to ruinous and ill-advised taxation. In making this brief comment on direct taxation he wanted it to be understood that he was speaking as a business man without regard to party politics.

In conclusion, the Chairman made an especial appeal to those few firms who had not yet seen fit to join the Association. Conditions at the moment were changing and were bound to affect their interests, sometimes to their benefit and sometimes otherwise. It was the province of the Association to

stand guard over the traders' interests during these changing conditions. It would be agreed that the Association had done splendid work in the past and it was, under the present circumstances, essential that it should be supported by every trader.

The report and accounts were unanimously adopted.

Election of Officers

Several members paid warm tributes to Mr. Blagden's work for the Association, particularly in bringing together and cementing the union of the two parent bodies, and he was re-elected president. It was also decided to send him a telegram from the meeting, wishing him a speedy recovery.

Mr. A. F. Butler was re-elected chairman, Mr. S. J. C. Mason, vice-chairman, and hon. treasurer, and Mr. A. Hughes hon. auditor. Mr. H. A. Berens was re-elected to the executive council to which Mr. H. M. Roemmle (of Roemmle and Co., Glasgow) was added to fill the vacancy caused by the resignation of Mr. Hamilton.

Responding to a vote of thanks moved by the Chairman, the secretary (Mr. O. F. C. Bromfield) referred to his many negotiations with Government departments and to the great help afforded him on these occasions by the prestige of the name of the Association and of the firms with which the Chairman and President were associated.

The Influence of Technique on Research

By Major F. A. Freeth, F.R.S.

In the twentieth May Lecture to the Institute of Metals, delivered on Wednesday in London, Major F. A. Freeth, chief research chemist to Imperial Chemical Industries, dealt with the important part played by technique in the successful prosecution of research. Selections from the lecture are given below.

WHILST it is probably not possible to prescribe and to legislate for the greatest types of discovering mind, it is possible, especially in the light of history, to lay down a number of maxims which have been a means of stimulating discovery in the past and will certainly serve again in like manner in the future. One of the most obvious and important of these is a proper control of the variables of nature and the possibility of manipulating matter and subjecting it to treatment under the most varied conditions. This is what I mean by technique.

It is very difficult to imagine what would be the present state of science and, incidentally, of industry, if rubber, mercury, and glass were unheard-of substances. Platinum also has played a big part in the development of discovery. Suppose that there were made a statistical analysis of the variables under which every chemical and physical experiment has been made during the last hundred years, it would be found that an overwhelming majority of these experiments were made within those conditions, say, of temperature and pressure which are very easily attained—namely, those which are near to the ordinary conditions of our human existence. Someone might say that surely these are the most important. The reply would be that it is manifest that the future progress, prosperity, and advancement of the Institute of Metals will depend very largely on further conquest of those very difficult variables of nature under which you already work—that is to say, upon improved technique.

Difficult Methods of Manipulation

Let us consider one or two of the great schools of discovery which, in addition to the genius of their founders, have owed a great deal of their success to difficult methods of manipulation. The classic instance is, of course, that of the discovery of the rare gases of the atmosphere by the late Sir William Ramsay. That discovery originated from discrepancies in a physical constant of nitrogen prepared chemically from nitrogen derived from the atmosphere. But it was Ramsay's extraordinary powers of manipulation, the originality of his technique, which clinched discovery and made success possible. Take, again, the famous low-temperature school of my old and lamented friend the late Professor Kamerlingh Onnes, of the University of Leiden. In that wonderful laboratory he had to build up a school of technique. Consider some of the discoveries that he made—superconductivity, for instance. The change is a remarkable one; at a certain temperature resistance practically vanishes. Why was this not

discovered much sooner? The answer is because of the enormous physical experimental difficulty in attaining a sufficiently low temperature. Like all other technical difficulties, once they are overcome, time and experience make easy the repetition of the work. Liquid helium, once almost as rare as the Great Auk, is now manipulated by the litre. Methods of working which are so new that sufficient time has not elapsed to enable them to be generally appreciated may be mentioned—e.g., the remarkable work published about a year ago by Burch on distillation in a really high vacuum (which, in my opinion, may have a profound influence on organic chemistry and on biochemistry), and the work which is being carried out by Michels in Amsterdam at what popularly may be referred to as super- or possibly hyper-pressures.

Turning to industry for a moment, you all know the remarkable results achieved by the chemical technologist during the past decade by his new pressure technique. I have long been convinced that the study of metals is as yet almost in its infancy, and that in spite of the voluminous and magnificent work which has been hitherto accomplished, metallurgical progress will depend upon the way in which you can manipulate the very difficult conditions which are inseparable from your work.

Why do people usually resist new experimental methods? In a very great number of cases you will find that a particular school of research has been built up on a technique devised by itself, and perfected after a long series of disappointments and difficulties. If it depends upon the particular personal skill of an individual, so much the worse. So many of us are quite oblivious of our really strong points, and inordinately proud of one of our second-rate accomplishments; thus, when a new technique comes along, there is pride in the old one and very often a real difficulty in taking up the new one.

I have already mentioned that the general mechanical facilities for research in this country are very poor. Let us begin with a most important factor, mechanics and glass-blowers. Generally speaking, they are not good enough, and, even if they were, they are nothing like sufficiently plentiful. Of course, as we all know, there are some magnificent British fine mechanics and glass-blowers, and what so frequently makes them all the more worthy of respect is the fact that they have frequently arrived at their present excellence *ab initio* as it were. The fault, or rather the difficulty, with our own mechanics and glass-blowers is that they very seldom have a chance

of handing on their skill and experience to anyone else in a systematic manner. A scientist who has not access to a good workshop does not know what he has missed, his experimental and even his mental work are handicapped by a constant succession of inhibitions due to his lack of mechanical aids. The number of skilled assistants in this country of this character could be quadrupled with enormous immediate advantage to science, and subsequently to industry. Modern biology and physiology, for example, would benefit enormously by more mechanical assistance. There is not a university or research institution in Great Britain where existing facilities could not be doubled with advantage, and there are plenty with no facilities at all. Why, then, is there no loud insistent demand? The reason, I think, is threefold: (1) The men are not to be had; (2) there is no money to pay them; and (3) the average research worker in this respect has come down to a settled despair. One of the tragedies of modern life is the lack of real interest of powerful people in science and research. An appalling amount of nonsense has, of course, been talked about research as a panacea, as though you could go out and bring success by hiring a few mediocrities.

Learning from the Foreigner

The point is how to make a start. The answer, to begin with, is to employ foreigners if you cannot find sufficient first-class home talent, and to educate your incoming personnel abroad to begin with if necessary. The number of people involved is so small, and the advantages to be gained so great, that political arguments, especially in the face of the utterly illogical character they assume on examination, may be safely disregarded. There are numerous branches of science whose progress could be greatly stimulated by closer contact with others, due in almost every case to advantages obtainable by exchange of technique. A great deal can be done by insistence on travel. We all of us suffer from the most extraordinary inertia, and very frequently are unaware of first-class work, which may be going on two or three hundred yards from us, in another department. One of the factors contributing to this is what you might call the vertical organisation of modern life. Science has become most extraordinarily specialised, and so has industry. It is the easiest thing in the world for any busy man confronted with a particular problem to say that it is a matter for such and such a department, or such and such a section of science. The result of this is to create almost a pontifical organisation headed by the names of various sciences. I think that there is no question but that modern science lives far too much in water-tight compartments. I am really arguing that technique should be a kind of mutual exchange among the various branches of science.

Needs of the Metallurgist

So far, my remarks have been of a general character. Turn for a moment to the importance of technique to those engaged in the study of metals. Where would the modern metallurgist be without his microscope and its elaborate technique? Second, the induction furnace. The induction furnace is a comparatively new weapon, and one which is not used as much as it ought to be—mainly, I think, on account of its rather high initial expense in the larger sizes. We have in this country the British Cast-Iron Research Association, which is doing most valuable work under considerable difficulties and yet is not equipped with a reasonable sized induction furnace. If this were otherwise, discovery would advance at a much greater rate than it does at present.

As society becomes more and more organised, the more able people are generally forced, even against their will, to become organised themselves and to delegate a very great deal of work. Directors of research are very necessary individuals, but, if you take the trouble to canvass the opinion of the celebrated men of our time, you will find that there is a remarkable consensus of opinion that any man, however great his genius, is probably not capable of directing the work of more than fifteen people; that is to say, of directing the work in order to obtain the maximum results. The result of this is that those men who are most fitted to judge the experimental value of a piece of work very often have not got the opportunity to do so. Taken to its limit, over-organisation means that all the work is done by juniors.

The question of what might be done, given existing resources and technique, in the way of immediate discovery is a fascina-

ting one. During the lifetime of the majority whom I am addressing we have seen very great changes taking place in the prime-mover. We have seen the steam-engine advance enormously in efficiency owing to the use of the turbine, which again is threatened by the Diesel engine. I venture to predict that there is very little except money and courage standing in the way of the immediate development of the gas turbine, and, if there is anything standing in the way, the opposition will come from the metallurgist, who will tell me he is not possessed of the materials capable of standing up to the rigorous conditions which will be required. I venture to prophesy that in ten years' time we shall see the gas turbine, or something like it, utilising between 40 and 45 per cent. of the heat efficiency of the fuel in the form of mechanical energy on the shaft. The efficiency of an engine depends upon the initial and final temperatures of the thermodynamic fluid employed and not essentially upon its pressure. If we can find materials which will stand up to largely increased temperatures—and there are many such, and new ones are constantly appearing—I see no valid reason why we should not secure a very greatly increased efficiency in our prime-movers.

Then we have the question of the strength of metals. Everyone knows that a metal is not as strong as it ought to be. Do you not think that it is very probable that within the next ten years you will be possessed of metals and alloys of a much greater strength than you have at present, and that this will come about almost entirely by improvements in technique? The other scientific matter which I have in mind, is a question of what would happen if science were possessed of the means of using increased voltages. In this connection one must be very careful not to stimulate exaggerated hopes, but there is no reason at the present time why an installation should not be erected capable of generating an electrical pressure of, say, ten million volts.

Financial Difficulty

The real difficulty in putting such ideas into execution is a financial one. There are many phenomena which require large-scale apparatus, a very great deal of expenditure before they can be realised. Also they may fail. So I would submit to you there are certain aspects of research which can only be taken up by, say, governments. We all welcome the very generous assistance which the State has afforded to science during the last generation, but I think that it ought to go further. There are certain experiments which can only be carried out by the expenditure of very large sums of money, and the results of which might be so far-reaching that they are very well worth the thoughtful attention of an enlightened government, if only on the score of a gamble.

Considerations like these make one wonder if the general organisation of industrial research is right in this country. We have associations for the study of various definite industrial problems—you yourselves, in the Institute of Metals. We have institutions for the study of various textiles. It is an open question whether you would not obtain better results, if you organised your research by divisions of science rather than by divisions of practice. Take metals, for example. You could bring in metals and many other things into an institution devoted to the study of high-temperature equilibria, using the word in its widest sense. There is no question but that the mainspring of research should be scientific enthusiasm, and that you should judge a man far more by the quality of his work than by the results it produces. Modern life, especially industrial life, offers such glittering material prizes to the administrator that we must endeavour to find a stimulus for the scientific research worker proper. This stimulus should be mainly intellectual.

To sum up:—(1) There is no royal road yet known to discovery and to the attainment of new scientific results, but the history of the past shows us that results have very often been obtained by working in new and difficult fields. To obtain these results is very largely a matter of technique, and the mechanical aids to the prosecution of scientific research in this country are not nearly as great as they might easily be. (2) The vertical organisation of modern science and life renders this additionally difficult. Technique, taken more seriously, would act as a kind of solvent among the various groups. (3) We should do everything in our power to stimulate the intellectual interest and enthusiasm of our research workers.

Formaldehyde Condensations with Aromatic Compounds

Address by Dr. G. T. Morgan

At the annual general meeting of the London Section of the Society of Chemical Industry on Monday, Dr. G. T. Morgan, F.R.S., gave an address on "Formaldehyde Condensations with Aromatic Compounds," in which he discussed some work that has been in progress at the chemical laboratory at Teddington for 4½ years, although it has been interrupted by changes of staff and the death of some members of it. Dr. Morgan, assisted by Mr. N. T. L. Megson and Dr. P. H. Holmes, exhibited 100 specimens and carried out a large number of experiments to illustrate the various points dealt with in his lecture. The condensations discussed have, in many instances, an important bearing on the production of industrial chemicals such as organic colouring matters, synthetic drugs, or artificial resins, but it is, perhaps, in connection with the last that the most important work is being done at Teddington.

Growth of the Industry

The importance of formaldehyde condensations with phenols, Dr. Morgan stated, might be gauged from the fact that the world's production of synthetic formaldehyde resins, which was about 9,000 tons in 1921, had increased to 13,000 tons in 1926, of which the United States was responsible for 40 per cent., Germany 24 per cent., Great Britain 16 per cent., France 8 per cent., and other countries the remaining 12 per cent. The reactions had been carried out at the Chemical Laboratory at Teddington with either acidic or alkaline condensing agents. The reactions with acidic condensing agents had led to fusible soluble resins of the Novolak type and during the chemical changes it had been possible to identify certain crystalline intermediates. In the experiments at Teddington, those intermediates were all of the diphenylmethane type $\text{CH}_2(\text{C}_6\text{H}_5)_2$, although other workers had noted saligenin and aurin.

Alkaline catalysts favoured the production of insoluble resins and, when the alkali was weak or very dilute, intermediate crystalline products were distinguishable where methylol groups had been introduced into the phenolic molecules. The experiments on phenolic condensations had been carried out by Messrs. N. J. L. Megson and A. A. Drummond, who were communicating a detailed paper on the subject. This work had led to the development of a semi-works scale process for the production of formaldehyde-*m*-cresol resins. In these larger scale experiments the medium was either alcohol or acetone, and the use of these volatile solvents had served to regulate the course of these highly exothermic condensations. Acetone suffered from the disadvantage that in the presence of alkali it condensed readily with formaldehyde to yield non-aromatic resins.

Low Temperature Tars

In addition to the experiments on pure phenolic substances, certain very suggestive experiments had been made by Dr. D. D. Pratt in the formaldehyde condensations of the phenols of low temperature tars. These phenols were divisible into three classes: (a) crystallisable phenols; (b) viscous tar acids; and (c) resins. The crystallisable phenols consisted essentially of phenol, but one of the difficulties of dealing with crude mixtures of phenols was to determine the amount of formaldehyde required for the reaction. An excess led to an infusible insoluble resin even in the case of an acid catalyst. The chemical nature of the viscous tar acids was unknown, but satisfactory resins had been prepared employing both acid and alkaline catalysts. Resins were in themselves resins displaying many of the properties of synthetic and natural resins. Being phenolic, however, they could be condensed with formaldehyde and a type of resin bakelite had been prepared. In this case alcohol was used as a solvent, the product being precipitated by the addition of petroleum to the reaction mixture. The process employed for making large (24 lb.) batches of *m*-cresol resin consisted in condensing together *m*-cresol, paraformaldehyde, caustic potash or soda, and alcohol. The mixture, which was refluxed for two hours, reached a temperature of 89°, falling to 80° at the end of condensation. After cooling, the resin solution was washed with sodium nitrate solution containing hydrochloric acid in slightly greater amount than was necessary for the neutralisation of the alkali, and the small excess of acid was then

removed by repeated washings with aqueous sodium thiosulphate. The neutral solution was dried over anhydrous sodium sulphate and filtered, being then ready for use in the making of wood-meal composition, impregnated paper, laminated boards and other resin products.

During a short discussion on the address comment was made upon the national importance of the work being done at the Chemical Laboratory at Teddington, and Dr. Morgan remarked that, although the laboratory had never been formally opened, or even given a distinctive name, he had hopes that it would become one of the established scientific institutions.

Dr. G. T. Morgan was re-elected chairman for the 1930-31 session and Dr. H. E. Cox was re-elected hon. secretary. To fill vacancies on the committee, Dr. L. A. Jordan, Dr. F. H. Carr, and Mr. F. M. Potter were elected.

Professor Fritz Haber

Views on German and English Chemistry

An interesting comparison of German and British chemistry is contained in a report of an interview with Professor Fritz Haber, the great German scientist, which the *Manchester Guardian* publishes from its scientific correspondent. Professor Haber, one of whose great achievements was in the commercial synthesis of ammonia and who was mainly responsible for the preservation of German laboratories after the war, is described as the "Stremann of German science."

The methods of the chemical industry which was founded in England in the first half of the last century, he says, were mainly empirical, and works managers did not bother much about the nature of the processes they used so long as results and profits were obtained. This attitude was conserved by the enormous success of empiricism at the beginning of the Industrial Revolution in England, and has persisted to some degree ever since. About 1850-60 Germany began to send men to learn the English technical chemical processes. These were men of education and initiative, and they returned to Germany and started new chemical industries there. Thus, from the beginning, many of the chiefs of the new German industries founded in the 'sixties were scientists first and industrialists afterwards. There has never been any sharp separation in Germany between scientists and business men in the chemical and other important industries.

Scientist Regarded as a Doctor

In Britain industrialists have always had a tendency to regard the scientist as a doctor, someone called in to prescribe in times of difficulty, and not incorporated as a partner in the concern. The independence of the scientist, someone who takes fees but is not salaried, has been adjusted with English social ideas.

The pressure of international circumstances forces Germany to be scientific. She has no colonies to engage her interest and attention. Britain always has the organisation of her Empire to distract her from the problems of internal organisation of science and industry. Indeed, for the British it is more profitable to know how to rule other countries than how to super-organise her own. If Britain had no colonies she would have nothing to distract her from the intensest efforts of rationalisation.

In Professor Haber's opinion, Britain has a long period of comparative prosperity in front of her. The British blame the Government for their difficulties, and yet to other nations British Governments seem extraordinarily able. The British discuss only the bad points in their industrial and colonial affairs, so that the nineteen good ones are forgotten in the clamour over the deplorable twentieth. British conditions seem to be comparatively happy to those who have to struggle with such intractable problems as the expansion of population where there is no room for it, as in Germany.

United States Tariff Revision

THE U.S. Tariff Revision Bill, which affects a considerable number of chemical products, it is understood, will probably become law on or about June 1, unless it receives the veto of President Hoover. Only goods arriving in the United States before actual presidential signature will be subject to the rates of the 1922 Act, as a definite ruling has been given against any extension to include date of shipment.

Unemployment and Work

By Sir Ernest J. P. Benn

In the second article of this series, "Making the worst of it," Sir Ernest Benn pleads for a new outlook, and emphasises once more the doctrine of personal responsibility. The first article appeared in "The Chemical Age" of May 3. The next will deal with "Thinking upside down."

II.—Making the Worst of It

If our politics were healthy, we should hear both sides of the unemployment question. As it is, we only get different views of one side of the matter. Three political parties, all playing the same game, all offering bribes and all promising the impossible, tend not unnaturally to drive common sense out of popular discussion. How much better we should be if one party told us we were going to the dogs and the other, taking the natural line of opposition, argued that we were on the road to prosperity! In that case the public would perhaps be able to discern the truth and would understand that we are really in a fairly natural position, and that there is not as much to worry about as interested politicians would have us believe. As it is, we are doing ourselves no good at home and infinite harm abroad by encouraging the notion that we are all out of work.

Trade depends upon buyers, and a little more study of the mentality of the buyer and a little less emphasis on the supposed interests of the seller might make a striking alteration in the state of affairs. As we are all buyers at some time or another, it is not difficult for any of us to understand how buying may be discouraged. We do not, for instance, rush to a theatre when we hear that the seats are mostly empty. On the contrary, we queue up in the rain to crush ourselves in when we are told that everybody is going to see some particular play. A cynic might say that we are sheep and must have a lead to follow. I prefer to think that in the matter of buying we like to feel the moral support of association with others. After all, a very great deal of our buying is only done because others do it also—women's fashions make this point quite clear. Then the average person dearly loves to be associated with success. He will buy a newspaper because he hears of its big circulation and avoid another journal, which is probably far superior, because it is understood to have difficulty in finding readers. When, therefore, we shout to the world that we are unemployed, the world pities us, but looks elsewhere for its purchases. Just as success breeds success, so failure breeds failure.

Over-Emphasising the Trouble

If the worst that is said about unemployment is true, it is nevertheless extremely foolish from a business point of view to emphasise the trouble. But the worst that is said is happily very far from true. Our position is infinitely better than we make it out to be; we have more employment than ever; we pay more wages than at any previous time. The income of the working classes taken as a whole is larger, the general standard of living higher. Considering our post-war difficulties, mostly created by political folly, we are in an economic position which reflects the highest credit upon those of us who still do real work. When, two years ago, I put this point of view to the annual meeting of the Charity Organisation Society, I was widely criticised and held up to scorn as a heartless creature. I find, therefore, no little satisfaction in listening to Mr. J. H. Thomas and applauding his efforts to get even the Socialists into a frame of mind when reason can be applied to this troublesome problem.

There is complete unemployment of the old-fashioned kind—total absence of any chance of work—to be found in one or two specialised industries and in several special districts. The industries are those which, like coal, have been ruined by politics, and the districts are those where an unnaturally large industrial population was introduced to make munitions of war. The rest of our vaunted unemployment, so far from being an old trouble, is in reality a new social benefit. No doubt it is making an ever-increasing quantity of trouble, which must in fairness be charged not to the failure of industry but to the success of the political agitator.

The point will perhaps be made more clear if the reader will imagine that instead of being English with our love of self-depreciation we were Americans with a genius for boost. What a different story we should tell! Our newspapers would be full of our wonders and our triumphs. The psychological skill

which has had the world madly jazzing for the last few years would put the dole dope over one hundred per cent. The illustrated papers would display the smiling photograph of Sam the Sea-side Chauffeur, who a few years ago had to earn a living in five months of the year and do odd jobs in the off season. Now, thanks to the wonders of Prosperity George and his People's-Budget-Every-time-Payment-Plan, Smiling Sam charges rather more for his five months' work and draws his "Loving Lloydy" for the other seven months. "Sam don't have to worry over odd jobs, and the cinema returns are up so many million dollars. Sam's health is better, his wife sees more of him and the country is a better place to live in."

But, fortunately, we are not American and we cannot amuse ourselves in this fashion, although it would be the proper and logical thing to do, if we believed all we said to ourselves when we first voted for the "People's Budget" and all the alluring delights of "ninepence for fourpence." We go to the other extreme, and now that we have secured to the full and more all the "benefits" which we ourselves planned, we set up a wail to the world that we are down and out and unemployed.

There is, of course, a vast, tragic difference between Smiling Sam and the coal-miner who has had no work for years, and in between the two are many grades of trouble, but we lump them all together in our lazy way, treat them all as if they were alike, and degrade our own intelligence by refusing to face up to facts.

When we discuss the causes of unemployment we take the line of least resistance and blame the foreigner, the war, the money market, or some other remote and nebulous bogey which has no chance of answering back. Thus, for example, we seldom mention women. But surely, if industry has put two men out of work and absorbed three women (for that is roughly what has happened), the numbers of employed are increased by 50 per cent. and a big step forward is made by the feminist movement. This from the industrial or the feminist point of view is triumph rather than disaster, except to that shallow, safety-first type of thinker who forgets that nothing can be done without cost. We may differ as to the wisdom of making wholesale payments to juveniles, but we can all agree as to the absurdity of using such payments as evidence of industrial depression.

Failure of the Ministry of Labour

The Ministry of Labour is but thirteen years old and was established to arrange and facilitate employment. So great is our common respect for Government institutions, that to suggest that the Ministry itself is one of the causes of unemployment sounds like a species of gross sacrilege. But surely the question is worth examination. If the Ministry, instead of enjoying a blank cheque on the public purse, had been floated as a company, it would have gone into liquidation years ago. A study of its prospectus, of the speeches and promises of its authors and advocates shows that every hope on which it was founded has been falsified. This conclusion is inescapable whether we examine the matter in principle or in detail. When the State first said to the worker: "We will find you employment," it drove a fatal crack into our economic foundations, comparable to the effect of one of those noisy pneumatic drills on the concrete foundations of our roads. A totally new and altogether false thought was put into the minds of millions of people. The nature of industry, the true character of work and the sense of personal responsibility which is inherent in them, were all smothered up in political falsehood. Economic salvation, depending as it does upon value for value, was cast aside and discarded for the tempting but devastating lie—ninepence for fourpence.

We are a simple, docile people, which fact in itself is perhaps a point in our favour, but when those qualities lead us, as they have done in recent years, to accept as sacred and perfect everything labelled with the authority of Government, it is time that we developed a few of the balancing qualities of cynicism and pugnacity. As it is, if a government uses a word, say "Peace" or "Coal" or "Housing" or "Employment," we all seem to take it for granted that the actions of governments in these

matters must be good. It does not seem to dawn upon us that in some circumstances and in some mouths talk of peace may lead to war, or talk of coal may drive us to oil, or that official fussing about employment may put us all out of work.

The subject becomes the more worth inquiry when we remember that the Ministry of Labour, set up to facilitate employment, has, in the course of a very short career, simply established legions of bureaucrats whose living absolutely depends upon the absence of the very employment which they were appointed to provide.

Not only do we tempt our people to develop the spirit of idleness, but in doing so we make it much more difficult for the great majority who are happily immune from any such temptation to exercise their natural right to work. We multiply rules and regulations which are supposed to help, and often only hinder. For example, we raise the school leaving age with the silly idea that by withdrawing boys and girls from industry we are making jobs for men and women. There are, of course, a few cases where this notion is more or less well founded, but in other cases the absence of a boy will throw the man out of work as well. By removing the soprano from a church choir you do not make more employment for the bass, and so it is with an industrial unit: there is a proper proportion of skilled and unskilled men and boys and women and girls which gives the requisite efficiency and enables the product to be marketed. If that proportion is disturbed the whole trade may be dislocated. Yet we go on merrily with this sort of folly, a little more each day.

A New Outlook Needed

We need a new outlook, a change of heart, an alteration of our philosophic viewpoint. We must give up the Safety First mentality and write upon our banners a more inspiring thought. By now we have enough experience of legislative and restrictive failure to know that success and happiness are personal achievements and cannot be conferred upon us by order.

In talking in this way I am running risks, but I face them gladly. I have too often been called a heartless wretch, in those and other more decorative words, for doubting the sense of the "benefit" idea. But when I stand on the pavement outside a Labour Exchange and look into the faces of my fellow citizens as they drag themselves up to receive their doles and allowances, I become more convinced than ever that if there is any heartlessness in this discussion at all, it is to be found heavily coated and hidden by the sloppy sentimentality of a social policy which ignores most of the truth of life. Studying the expressions of these poor victims I see qualities which are denied by the popular philosophy of social rights. I believe that if the doctrine of personal responsibility were preached to them and if we framed our policy in such a way as to give it a chance, they would not only be much better off but would have a chance to enjoy the delights, now denied to them, of personal pride and healthy self-respect.

There is real happiness to be won by facing difficulties, and if we were honest with ourselves we would give up the notion either that life can be so arranged as to be free from difficulty, or that it would be worth living if that could be done. Ignoring truth, we seek a snobbish satisfaction in pretending to shoulder the difficulties of others. Needless to say we do not really shoulder them, we merely vote rates and taxes for the purpose.

A straightforward appeal to the manhood of the nation would flatter and delight millions who are now encouraged to regard themselves as hopeless automata in a machine of which they can know nothing and should care less.

Canadian Distillation Industries

THE Dominion Bureau of Statistics has forwarded to the Acting High Commissioner for Canada in London, a report on the distilled liquor industry in Canada, giving figures for the year 1928. The report covers the statistics of 18 establishments capitalised at \$51,287,103, employing 1,884 persons whose salaries and wages aggregated \$2,560,459. The gross value of products turned out during the year was \$38,423,743, the materials used being worth \$10,137,114. The production included whiskies and other potable spirits, non-potable alcohol, distillers' grains, etc., denatured alcohol, and fusel oil. Of the distilleries mentioned, six were in Ontario, seven in Quebec, three in British Columbia, one in Manitoba and one in New Brunswick.

Chemical Matters in Parliament

Lord Melchett on the Coal Mines Bill

OPPOSITION to the Government's Coal Mines Bill was expressed by Lord Melchett when it came up for second reading in the House of Lords on Tuesday, April 29. He approached the problem, he said, in a dual capacity, as chairman of a coal company which produced 4,000,000 tons of coal and as chairman of a corporation which consumed about 2,000,000 tons of coal per annum. From the producers' point of view the introduction of the Bill at the present time was unfortunate, and every clause of it was designed to make coal more expensive.

If the coal industry were allowed to develop, it would find new outlets. He was more hopeful than ever before that the conversion of coal into fuel oil might in years to come develop into a large industry. But if it were found possible to convert into oil several million tons of coal a year in an area whose coal was especially suitable, it would entirely upset the quota figures laid down.

If, instead of importing large quantities of foreign steel, they adopted the method of putting a duty on steel imported and produced it here, there would be restored to the coal industry a very large consumption of coal for steel. It was a fantastic notion that we must look wholly to exports to make an industry flourish. We had at our doors in the steel industry an enormous potential consumption of which we did not make the slightest use.

After a three days' discussion the second reading of the Bill was agreed to.

Dead Sea Salts Concessions

In reply to Col. Howard Bury, Mr. Arthur Henderson (House of Commons, April 30) stated that he had received a further communication from the French Government and hoped shortly to be able to make a statement on the matter.

Indian Chemical Industry

Major Pole (House of Commons, April 30) asked the Secretary of State for India whether, in view of the statement of the commerce member in the Indian legislative assembly on February 11, that the Government of India would endeavour to publish the report of the Tariff Board on the chemical industry in India before the end of March, he could say whether the report of the board has now been made public; and, if so, whether he would inform the House of the terms of the Board's recommendations.

Mr. Benn: The report has not yet been published. The reason for the delay is, I understand, the complicated nature of the subject.

Two Liverpool Accidents

Explosions and Chlorine Leakage

SEVEN men were killed, and about 40 others injured, through two explosions at the seed crushing mill of J. Bibby and Sons, Ltd., Neptune Street, Liverpool, on Monday. The explosions occurred on the eleventh floor of a warehouse which is fitted with several iron silos down which seeds are sent to other floors, and men who were working on this floor were flung in all directions. Several had their clothes blown off and many were severely burnt.

In the House of Commons on Tuesday, the Home Secretary, replying to Mr. Hall Caine, said he had received a preliminary report on the disaster. The circumstances called for searching inquiry, and it was much too early to arrive at any conclusion. The Chief Inspector of Mines had sent an engineering inspector who had special experience in industrial explosions to assist in the investigation. The explosion was thought to have resulted from a spontaneous combustion of rice meal in one of the silos which ignited a cloud of dust within the silo.

Also on Monday, in Liverpool, fifteen people were taken to hospital suffering from the effects of chlorine gas which had leaked from iron cylinders stored in a stable in Slade Street, owing to corrosion of the metal of the cylinders. The owner of the stables stated that the cylinders had apparently been in the yard before he took the stables over, and he was unaware that they were there.

From Week to Week

ST. ANDREW'S UNIVERSITY COURT announce that Imperial Chemical Industries have made a further grant of £150 to the Department of Chemistry for research work.

LEGISLATION IS PROPOSED for the provision of a bounty of 49½ cents per ton on bituminous coal mined in Canada, when converted in the Dominion into coke for use in the production of pig iron or steel.

ACHEMA VI, the great international exhibition of chemical plant and apparatus, which is to be held at Frankfort-on-Main, Germany, from June 10-22 next, will occupy a space of 25,000 sq. yds. all under one roof.

A MEMORANDUM on the market for paints, varnishes and colours in Egypt is available for United Kingdom firms on application to the Department of Overseas Trade (Ref. No. B.K. 6,383), 35, Old Queen Street, London, S.W.1.

MR. J. G. NICHOLSON, one of the directors of I.C.I., is among the representatives of industry who will serve on the Development Council, set up by the Department of Overseas Trade, to examine the problems of export market conditions.

BRITISH RAYON OUTPUT in the first quarter of this year amounted to 12,810,000 lb., against 15,180,000 lb. in the previous quarter. The amount excised for sale was 11,400,000 lb., against 14,900,000 lb., surplus production being therefore 1,400,000 lb. against 280,000 lb.

THE SUBDURY-HARDYMAN prize of Cambridge University, offered annually for the best dissertation sent in by a graduate under M.A. standing, has this year been doubled, one of the awards going to J. G. A. Griffiths, whose subject was "A Problem in Photo-Chemistry."

A PAPER on "The Origin and Nature of Coal and Chars," by Professor H. E. Armstrong, is among those to be read at the meeting of the Royal Society on Thursday, May 15. Two others on "The Liberation of Electrons from Metal Surfaces by Positive Ions," have been communicated by Sir Ernest Rutherford.

THE PARIS CONFERENCE of nitrate producers, after sitting for a fortnight, has adjourned for at least a further two weeks, as the result, it is believed, of the dissatisfaction of certain companies at the proportion of shares offered to them in the proposed new £75,000,000 company. Their representatives wish for further time to communicate with their principals in Chile.

RECENT WILLS include:—Mr. James Woodward, late superintending analyst, Government Laboratory, London (net personality, £12,440), £13,530, who left to Birkbeck College, London, "such of his books, diplomas and certificates as the governors may elect to take."—Mr. Samuel Harford Lury, of Reigate, chairman of Morris Ashby, Ltd., manufacturing chemists (net personality, £16,139), £21,537.—Mr. Arthur Sunderland, of Keighley, technical chemist (net personality, £6,642), £7,450.

SOVIET INDUSTRIAL ORGANISATIONS, states a report from Moscow, have requested the Trade Commissariat to negotiate for a supplementary clause to the agreement with Imperial Chemical Industries increasing the £3,000,000 credit to £4,000,000, as the requirements of the Soviet industry have risen so greatly. The Trade Commissariat has decided to open up these negotiations at once, as the deliveries by the German chemical industry to Russia have greatly declined. They will be conducted through M. Bron.

A DISTINGUISHED COMPANY will assemble at the Mansion House on May 27 to hear the Lord Chief Justice and Mr. J. H. Thomas, M.P., on the subject of the John Benn Hostel. Among those who have intimated their intention of being present are Lady Astor, M.P., Lord Clive, Lord Pentland, Sir John Barran, Mr. Max Bonn, Sir Harold Bowden, Mr. Geoffrey Duveen, Don Agustin Edwards, Mr. Gerald France, Sir Harry Hepburn, Sir Robert Kindersley, Dr. Herbert Levinstein, Sir Percy Mackinnon, Sir William Noble, Mr. Handley Page, Sir Denison Ross, Sir Henry and Lady Rothband, Air Commodore C. R. Samson, and Sir Edward Stockton. Viscount Astor will preside at the dinner and receive the guests, and among the other speakers are the Rt. Hon. Wedgwood Benn, M.P., Lord Feversham, Mr. R. C. Sherriff, and Miss Haldane.

THE FOLLOWING have been elected Fellows of the Physical Society: William Herbert Aldous, Ronald Curry, Geoffrey Price Gowland, and Neville Melton Bligh.

THE DEBT OF CIVILISATION to science and industry is the underlying idea of the Liège Exhibition, which was opened by the King of the Belgians on Saturday and is to remain open until November.

SIR ERNEST RUTHERFORD has been appointed chairman of the Advisory Council of the Department of Scientific and Industrial Research in succession to the late Sir William McCormick, as from October 1, 1930.

IT IS REPORTED that La Société des Engrais et Produits Chimiques de la Meuse, in whose formation the Etablissements Kuhlmann largely participated, has constructed an important ammonia plant at Tilleur-Ougrée, near Liège.

GERMAN EXPORTS of dyes and dyestuffs in the first quarter of this year amounted to 42,064 tons, valued at £3,665,000, representing an increase of 1,866 tons in weight, but a decrease of £235,000 in value, compared with the first quarter of 1929.

UNIVERSITY NEWS: *Wales*: David Charles Jones, M.Sc., has received the degree of Doctor in Science (chemistry). *Glasgow*: On June 18 the honorary degree of Doctor of Laws will be conferred on Julius Berend Cohen, Professor of Organic Chemistry at Leeds University, and on Sir Ernest Rutherford, of Cambridge University.

A PRELIMINARY AGREEMENT, it is understood, has been signed between Sagacia Holding and Italian chemical companies whereby Sagacia will take a 51 per cent. share interest in Società Anonima Marengo, manufacturers of copper sulphate and other chemical products. The capital of Marengo will subsequently be increased by 15,000,000 lire to 30,000,000 lire.

SIR WILLIAM BRAGG sailed for New York on Saturday last, on his way to receive the Franklin Medal, conferred upon him for distinguished scientific services at the Franklin Institute, Philadelphia. He will deliver the opening address at the Technological Institute of Massachusetts, Boston, on the subject of the X-ray, and will subsequently speak at other meetings in various parts of the United States.

THE RAMSAY MEMORIAL FELLOWSHIP Trustees will consider at the end of June, 1930, applications for Ramsay Memorial Fellowships for Chemical Research, one of which will be limited to candidates educated in Glasgow. The value of each Fellowship will be £250 per annum, to which may be added a grant for expenses, not exceeding £50 per annum. Full particulars as to the conditions of the awards are obtainable from the Secretary of the Ramsay Memorial Fellowships Trust, University College, Gower Street, London, W.C.1.

AN INTERESTING COMPARISON between the import and export trade of the first quarter of 1924 and the corresponding period of 1930, as revalued on the basis of the average 1924 values, appears in the *Board of Trade Journal* of May 1. These figures eliminate the factor of price changes and also furnish an index of the aggregate effect of the alterations in prices in the intervening six years. Imports of chemicals, drugs, dyes and colours in the 1924 quarter totalled £3,498,000 as compared with £3,645,000 in the 1930 quarter, but, revalued on the 1924 basis, the latter figure grows to £4,093,000. 1924 exports were £6,790,000 and those of 1930 £6,169,000, which on revaluation becomes £8,021,000.

THE ANNUAL MEETING of the members of the Royal Institution was held on May 1, when the annual report of the committee of visitors for the year 1929, testifying to the continued prosperity and efficient management of the Institution, was read and adopted. The following officers were elected:—President, the Duke of Northumberland; treasurer, Sir Robert Robertson; secretary, Major C. E. S. Phillips; managers: A. Chaston Chapman, Ernest Clarke, Sir James Crichton-Browne, W. H. Eccles, W. Vaux Graham, Sir Herbert Jackson, Sir Lawrence Jones, V. Warren Low, Colonel Sir Henry Lyons, Sir Henry Miers, Hon. Sir Charles Parsons, Clifford C. Paterson, Robert W. Paul, Lord Rayleigh and W. J. Tennant; visitors: Colonel N. T. Belaiew, Frederick H. Berryman, C. V. Drysdale, Montague Ellis, G. E. Gask, David Heron, G. W. C. Kaye, Percy J. Neate, A. O. Rankine, E. H. Rayner, Hugh Munro Ross, T. C. Sandeman, Harold R. D. Spitta, Alfred E. Western and Robert S. Whipple.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Accepted Specifications

326,116. BORAX. T. M. Cramer, 242, St. Joseph Street, Long Beach, Los Angeles, U.S.A. International Convention date, December 19, 1928.

Minerals such as Risorite and Tincal, are heated under super-atmospheric pressure to a temperature substantially above 212° F. so that the borax dissolves in its own water of crystallisation. The process is suitable for borate minerals containing a gangue which has a tendency to slime when treated with water. The solution is separated from the residue and cooled to crystallise the borax.

326,117. CYANAMIDES. J. Guillissen, 7, Rue Gabrielle, Uccle, Brussels, and Union Chimique Belge, Soc. Anon., 61, Avenue Louise, Brussels. Application date, July 5, 1929.

Alkaline earth cyanamides are obtained by heating the carbonate, e.g., calcium carbonate, to 900° C. in a mixture of ammonia and carbon dioxide in such proportions, e.g., equal volumes, that the partial pressure of the carbon dioxide is not less than the tension of dissociation of the carbonate.

326,137. ORGANIC PHOSPHORUS COMPOUNDS. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, November 30, 1928.

These compounds, which are used for pharmaceutical purposes and for moth-proofing, are obtained by condensing a triaryl phosphine oxide with a compound containing a phenolic hydroxy group. Thus triphenyl phosphine oxide may be condensed with 4-benzyl-phenol and *o*-tritylphosphine oxide with phenol. A number of similar condensation products are also described.

326,148. DYES. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, December 4, 1928.

Vat dyes containing acridine or acridone rings are obtained by condensing mono- or di-halogenated derivatives of benzanthrone or its nuclear substitution products or of 2:2'- or BzI-BzI'-dibenzanthronyl, or of BzI-BzI'-dibenzanthronyl sulphide, with 1-amino-anthraquinone-2-aldehyde or an azomethine derived from it such as 1-amino-anthraquinone-2-aldehyde anil, or with anthraquinone-1:2-isoxazole. Alternatively, the corresponding mono- and diamino derivatives of benzanthrone may be condensed with 1-chlor-anthraquinone-2-aldehyde. An organic diluent, an acid binding agent, and a catalyst may be present. In an example BzI-brom-benzanthrone is condensed with 1-amino-anthraquinone-2-aldehyde in nitro-benzene, in the presence of cuprous chloride and potash. The product dyes cotton brown. A large number of similar examples are given.

326,149. AROMATIC NITRILES, MANUFACTURE OF. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, December 4, 1928.

These compounds are obtained by the reaction of one molecular proportion of an alkali cupric diamino-cyanide and two molecular proportions of a diazotised aromatic amine. Examples are given of the preparation of *p*-tolu-nitrile and benzo-nitrile.

326,157. DESTRUCTIVE HYDROGENATION. J. Y. Johnson, London. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 3, 1928.

Liquid or pasty carbonaceous materials are destructively hydrogenated at pressures above 30 atmospheres while being vigorously stirred by a rotary helical device, to avoid injurious thickening of the material or local accumulation of asphaltic products. The hydrogenating gas is simultaneously introduced in the form of fine jets. An example is given of the treatment of a residue of the distillation of crude American mineral oil at 200 atmospheres, with a catalyst of molybdc acid and zinc oxide.

326,176. COMPLEX ANTIMONY SALTS. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, December 5, 1928.

These compounds are made by the reaction of an oxygen compound of pentavalent antimony with an aliphatic hydroxy-carboxylic acid in solution, with or without a basic substance such as an alkali or a nitrogen base. The acids employed include tartaric, lactic, mucic, citric and gluconic, and nitrogen bases include diethyl-amino-ethanol or diethyl-amine. The solid compounds may be obtained from aqueous solutions by precipitating with methyl alcohol or by evaporation.

326,184. DESTRUCTIVE HYDROGENATION. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 3, 1928.

Catalysts immune to sulphur poisoning, which are used in the destructive hydrogenation of carbonaceous materials in the liquid phase, are employed in a colloidal-dispersion to avoid accumulation in the lower parts of the reaction vessel. Thus a catalyst may be made by grinding molecular proportions of molybdenum, zinc, and magnesium oxides, mixing with brown coal low temperature distillation tar, and then grinding in a colloid mill until 90 per cent. will pass a sieve of 10,000 meshes per square centimetre. The mixture is then mixed with more tar and hydrogenated at 440°-450° C. and 200 atmospheres pressure, without stirring.

326,185. CATALYTIC AGENTS. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, October 27, 1928.

Catalysts are made by mixing a phosphate of an alkali or alkaline earth metal with less than 10 per cent. of free phosphoric acid, or a material which furnishes free acid on heating, e.g., a mixture of primary sodium orthophosphate, primary *n*-butylamine phosphate and graphite. This is suitable for the preparation of butadiene from 1:3-butylene-glycol. Catalysts are also described for the production of ethylene from ethyl alcohol, and for splitting acetals, e.g., 1:3-butylene butylal, etc.

326,200. SYNTHETIC DRUGS. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, December 4, 1928.

These compounds are obtained by treating aromatic *m*-dihydroxy compounds containing an acidic group, but not an additional hydroxy group, with metallic compounds such as silver nitrate, thallium chloride, compounds of gold and iron, in the presence of ethylene-diamine.

326,210. INDIARUBBER. Dunlop Rubber Co., Ltd., 32, Osnaburgh Street, London, W. H. Chapman, D. W. Pounder, E. A. Murphy, and F. T. Purkis, Fort Dunlop, Erdington, Birmingham. Application date, December 7, 1928.

Aqueous rubber dispersions are preserved by adding a salt of hydrofluosilicic acid, or if the dispersion contains ammonia, free hydrofluosilicic acid. This increases the viscosity or causes gelling on heating or on standing, and gelling may be accelerated by adding zinc oxide. About 0.1 per cent. is necessary to increase the viscosity and 1.3 per cent. to cause gelling in the cold.

326,215. THYMOL. Rheinische Kampfer-Fabrik Ges., Oberkassel, Düsseldorf, Germany. International Convention date, October 12, 1927.

To obtain thymol, the isomers having melting points of 69° C. and 112° C. and boiling points 228.5° C. and 245-246° C. are heated with dehydrating catalysts such as those referred to in specification 298,600 (See THE CHEMICAL AGE, Vol. XIX, p. 565). Alternatively, a mixture of *m*-cresol vapour and di-isopropyl-*m*-cresol is passed over the catalyst or the mixture is heated in an autoclave. Thymol is obtained by fractional distillation, and the isomers and di-propylated *m*-cresol which occur as by-products are used again. Examples are given.

326,217. DYES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 7, 1928. Addition to 314,593 (See THE CHEMICAL AGE, Vol XXI, p. 113).

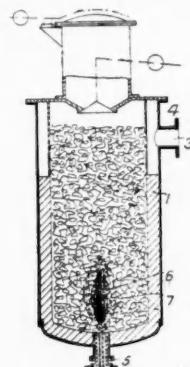
Nitrodibenzanthrones or nitroiso-dibenzanthrones or derivatives are heated with or without solvents or diluents such as nitrobenzene, naphthalene, nitronaphthalene or trichlorbenzene, and metals or non-alkaline metal compounds such as copper salts. Some examples are given of these products, which dye cotton from the vat in grey to black shades.

326,226. AROMATIC AMINO-SULPHOCHLORIDES. A. Carpmael, London. From I.G. Farbenindustrie-Akt.-Ges., Frankfort-on-Main, Germany. Application date, November 30, 1928.

These products are obtained by the reaction of chlorosulphonic acid and an aromatic aminosulphonic acid substituted in the amino group, or a nuclear substitution product. The corresponding amino-sulphochloride is obtained, or further sulphochloride residues are introduced into the molecule. The products are dyestuff intermediates, therapeutic agents, or insecticides. Examples are given of the production of 2-acetyl-amino-5-naphthol-7-sulphochloride from 2-acetyl-amino-5-naphthol-7-sulphonic acid, 1-acetyl-naphthylamine-4-sulphochloride from 1-acetyl-naphthylamine-4-sulphonic acid, carbonyl-2 : 1-aminophenol-4 : 6-disulphochloride from carbonyl-2 : 1-aminophenol-4 : 6-disulphonic acid, and a number of other similar reactions. The production of the sulphonic acids is also described.

326,227. CARBON MONOXIDE. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, December 1, 1928.

Carbon monoxide is produced by injecting oxygen, or gas containing 95 per cent. oxygen, through a cooled nozzle 5



326,227

with a minimum velocity of 30 metres per second. The reaction zone 6, where carbon dioxide is formed, is blown away from the nozzle, and is surrounded by a zone 7, where the dioxide is converted to the monoxide. The ash is vaporised and passes through a perforated iron cylinder to the outlet 3, after which it is separated from the carbon monoxide by washing. The generator has a fireproof lining 1.

326,322. BUTYLENE FROM ETHYLENE. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 22, 1929.

Ethylene, preferably liquefied, is treated with boron fluoride or other inorganic volatile halide which evolves heat on treatment with water, in the presence of finely divided nickel and an accelerator such as water or alcohol which can react to form halogen halides or organic halides. Butylene is obtained, and an example is given.

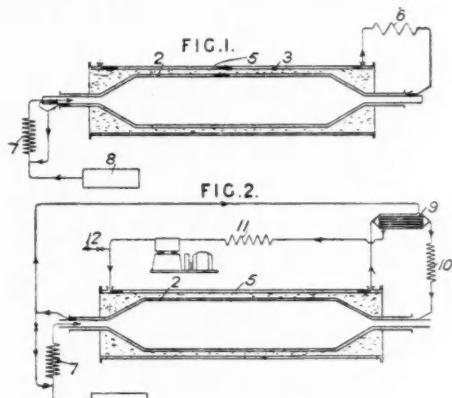
326,231. SYNTHETIC DRUGS. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, December 6, 1928.

The alkali salts of aliphatic oxy-carboxylic acids in aqueous or aqueous-alcoholic solution are treated with the oxides or hydroxides of metals, including arsenic and antimony, which can be transformed into a higher stage of oxidation. These

compounds are then subjected to the action of oxidising agents such as hydrogen peroxide, magnesium peroxide, or oxygen. The products may be neutralised with an alkali or other base. The oxidation of antimony potassium tartrate, potassium stannic tartrate, neutral sodium tervalent-antimony gluconate, and the acid diethylamine tervalent-antimony salt of mucic acid are described.

326,238. DESTRUCTIVE HYDROGENATION. W. R. Tate and H. P. Stephenson, Norton Hall, The Green, Norton-on-Tees, and Imperial Chemical Industries, Ltd., Millbank, London. Application date, December 8, 1928.

Peripheral heating of the reaction space by hot gas is combined with peripheral cooling of the external pressure-resisting



326,238

walls by cool gas. Cold hydrogen circulates through a jacket 3 to an external heater 6, where it is heated to 450°C., and then passes through a jacket 2 surrounding the reaction chamber 1. The hydrogen then passes in part into the reaction chamber and in part to a preheater 7 with coal, etc., from a pressure feed 8. In another form, the hydrogen, after passing through a cooling jacket 5, passes to a heat exchanger 9 and heating coil 10 to the heating jacket 2. The hydrogen then passes in part into the retort with coal, oil, etc., and in part passes through the heat exchanger 9 for re-circulation through the jacket 5.

NOTE.—Abstracts of the following specifications which are now accepted appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 303,527 (I.G. Farbenindustrie Akt.-Ges.), relating to diazonium fluoro sulphonates, see Vol. XX, p. 234; 308,713 (Chemical Works, formerly Sandoz), relating to anthraquinone derivatives, see Vol. XX, p. 546; 310,534 (I.G. Farbenindustrie Akt.-Ges.), relating to heterocyclic bases of aminoimidoazoline series, see Vol. XX, p. 620; 312,664 (G. Schoenber), relating to anhydrous perborates, see Vol. XXI, p. 114; 315,818 (Holzverkohlungs-Industrie Akt.-Ges.), relating to catalysts for the production of ketones, see Vol. XXI, p. 266; 316,315 (Durand und Huguenin Akt.-Ges.), relating to basic dyestuffs, see Vol. XXI, p. 295.

Specifications Accepted with Date of Application

303,797. Highly adsorbent cuprene from acetylene, Preparation of. Naamlooze Venootschap Electro Zuur-en Waterstoffabrik. January 9, 1928.

304,144. Preventing the formation of copper azide in copper lead azide detonators, Method of. W. Eschbach. January 14, 1928.

304,150. Separation of waxes into their acids and mixtures of their alcohols and hydrocarbons. I.G. Farbenindustrie Akt.-Ges. January 14, 1928.

304,207. Artificial rubber, Manufacture of. A. Carpmael. (I.G. Farbenindustrie Akt.-Ges.) January 15, 1929.

305,661. Esters of polymerised carbohydrates, Manufacture of. I.G. Farbenindustrie Akt.-Ges. February 10, 1928.

311,387. Ketones of the pyridine and quinoline series, Preparation of. A. Boehringer. May 10, 1928.

313,135. Metals, Treatment of—with acid liquids. Soc. of Chemical Industry in Basle. June 7, 1928.

313,505. Destructive hydrogenation of carbonaceous bodies. Holzverkhlungs-Industrie Akt.-Ges. and J. Varga. June 12, 1928.

327,950. Metal carbonyls, Production of. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) December 14, 1928.

327,997. Vat dyestuffs of the anthraquinone series, Manufacture of. A. Carpmael. (I.G. Farbenindustrie Akt.-Ges.) January 12, 1929.

327,970. Heat treatment of crude oil and coal and oil mixtures, and of the distillates therefrom. W. E. Trent. January 12, 1929.

327,990. Decoloration of oils. Co-operative Wholesale Society, Ltd., A. Glover and C. W. Couche. December 14, 1928.

327,996. Organic stibinic acids and salts thereof, Manufacture of. A. Carpmael. (I.G. Farbenindustrie Akt.-Ges.) January 15, 1929.

327,997. Tin from scrap tin-plate and like tin-bearing materials, Recovery of. H. Wade. (W. B. Ballantine and M. G. Gilbert.) January 15, 1929.

328,008. Extraction of hydrocarbons from gases. A. Carpmael (I.G. Farbenindustrie Akt.-Ges.) January 15, 1929.

328,005. Carbamates and their conversion products, Manufacture of. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) January 14, 1929.

328,029. Liquid nitrogen dioxide, Manufacture of. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) November 13, 1928.

328,032. Hydroxy-sulphamic acids and salts thereof, Manufacture of. A. Carpmael. (I.G. Farbenindustrie Akt.-Ges.) December 13, 1928.

328,040. Artificial compositions from the condensation, solutions of urea, thiourea, or their derivatives, and formaldehyde, Production of. L. N. Reddie. (Kunstharzfabrik Dr. F. Pöltak Ges.) December 11, 1928.

328,048. Hydrogen, Production of. D. Tyre and Imperial Chemical Industries, Ltd. January 25, 1929.

328,057. Electrolytic processes. K. Breusing and U. Gottesmann. January 30, 1929.

328,083. 1:3-butylen glycol, Production of. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) March 9, 1929.

328,092. Purifiers for evaporating apparatus. Appareils et Evaporateurs Kestner. November 23, 1928.

328,104. Leucoindigo, Manufacture of. Imperial Chemical Industries, Ltd., and K. H. Saunders. April 8, 1929.

328,115. Age-resisting rubber compounds, Manufacture of. Imperial Chemical Industries, Ltd., S. Coffey and W. J. S. Naunton. April 18, 1929.

328,128. Quicklime and sulphur dioxide, Production of. A. Fleck and Imperial Chemical Industries, Ltd. May 9, 1929.

328,138. Aluminium alloy. H. C. Hall and T. F. Bradbury. May 21, 1929. Addition to 323,353.

329,139. Effecting catalytic reactions between gases under pressure and at high temperature, Methods and apparatus for. S. G. S. Dicker. (M. C. Sacchi.) May 22, 1929.

328,156. Purification of highly concentrated nitric acid. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) June 14, 1929.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

American Cyanamid Co. Stearic acid resins. 13,047. April 28. (United States, June 6, 1929.)

Barnes, R. S. Dyes, etc. 13,192. April 29.

Blumenberg, H. Treatment of borax ores. 13,060. April 28.

— Production of calcium borate, etc. 13,165. April 29.

British Celanese, Ltd. Manufacture of industrial products, etc. 13,567. May 2.

— Decolorization of organic materials. 13,569. May 2. (United States, May 11, 1929.)

— Treatment of cellulose. 13,570. May 2. (United States, May 14, 1929.)

— and Celluloid Corporation. Treatment of organic derivatives of cellulose. 13,220. April 29.

Buchleitner, A. Production of phosphate. 13,378. April 30. (Austria, April 30, 1929.)

Bunbury, H. M., and Imperial Chemical Industries, Ltd. Vulcanization of rubber. 13,153. April 29.

— Vulcanization of rubber. 13,301. April 30.

— Purification, etc., of emulsion of rubber substitutes, etc. 13,573. May 2.

Bush and Co., Ltd., W. J. Preparation and isolation of aromatic oxyaldehydes. 13,067. April 28.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of indoles. 13,178. April 29.

— Protection of seed, grain, etc., from pests. 13,355. April 30.

— Manufacture of acridine derivatives. 13,356. April 30.

— Protecting materials against white ants. 13,357. April 30.

— Treatment of textiles, hair, etc. 13,358. April 30.

— Manufacture of water insoluble azo dyestuffs. 13,359. April 30.

— Manufacture of emulsifiable waxes. 13,360. April 30.

— Manufacture of bismuth salts. 13,361. April 30.

— Manufacture of fast vat dyestuffs. 13,362. April 30.

— Manufacture of N-substituted 5,6-di-alkoxy-8-amino-quinolines. 13,610. May 2.

Choate, M. F. S. Sulphonation of aromatic amines. 13,574. May 2.

Clifford, A. M. Preserving oxidizable hydro-carbons. 13,216. April 29.

Coffey, S., Henshaw, C. R., and Imperial Chemical Industries, Ltd. Sulphonation of aromatic amines. 13,574. May 2.

Dreyfus, H. Treatment of cellulose derivatives. 13,305. April 30.

— Separating liquid mixtures. 13,418. May 1.

— Treatment of organic compounds. 13,566. May 2.

— Manufacture of aliphatic compounds. 13,568. May 2.

Elkington, H. D., and Naamloose Venootschap de Bataafsche Petroleum Maatschappij. Manufacture of hydrocarbons of higher molecular weight from unsaturated hydrocarbons. 13,233. April 29.

Friedrich, W. Process for production of explosives. 13,293. April 30. (Germany, October 10, 1929.)

Gallo, G. Treatment of leucite, etc., for obtaining alumina, etc. 13,505. May 1.

Graesser-Monsanto Chemical Works, Ltd., Mather, E., and F. R. Graesser-Thomas. Production of oxy-benzoic acids, etc. 13,126. April 29.

Greenstreet, C. J. Heat treatment of hydro-carbon materials. 13,088. April 29.

Groves, W. W., and I.G. Farbenindustrie Akt.-Ges. Manufacture of halogenated cyclic ketones of the acenaphthene series. 13,313. April 30.

— Manufacture of condensation products containing halogen. 13,681. May 3.

Hofswimmer, F. Producing esters of nitric acid. 13,426. May 1. (Austria, May 2, 1929.)

Hooley, L. J. Scottish Dyes, Ltd., and Thomas, J. Dyes, etc. 13,192. April 29.

I. G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Apparatus for production, etc., of hydrogen peroxide, etc. 13,034. April 28.

— Manufacture of hydrocarbons. 13,035. April 28.

— Apparatus for conversion of coals, tars, etc. 13,036. April 28.

— Production of water-gas. 13,172. April 29.

— Manufacture of polyhydric alcohols. 13,489. May 1.

— Manufacture of aluminium compounds and phosphoric acid. 13,490. May 1.

— Carrying out reactions with hydrogen. 13,491. May 1.

— Improving surface of iron and steel. 13,595. May 2.

— Manufacture of condensation products from aromatic hydrocarbons. 13,596. May 2.

I.G. Farbenindustrie Akt.-Ges. Manufacture of halogenated cyclic ketones of the acenaphthene series. 13,313. April 30.

— Manufacture of N. Substituted 5,6-di-alkoxy-8-amino quinolines. 13,610. May 2.

— Manufacture of condensation products containing halogen. 13,681. May 3.

— Manufacture of acid wool dyestuffs. 13,185. April 29.

— Manufacture of vinyl chloride. 13,470. May 1. (Germany, May 1, 1929.)

— Immunizing seed grain. 13,476. May 1. (Germany, May 6, 1929.)

— Manufacture of liquid carbon dioxide. 13,609. May 2. (Germany, May 3, 1929.)

Imperial Chemical Industries, Ltd. Colouring cellulose esters, etc. 12,996. April 28.

— Recording electrical currents. 13,154. April 29.

— Manufacture of floor coverings, etc. 13,479. May 1.

— Extrusion presses. 13,496. May 1.

— Purification, etc., of emulsion of rubber substitutes, etc. 13,572. May 2.

— Collection of sulphur. 13,665. May 3.

International Industrial and Chemical Co., Ltd. Manufacture of alkali carbonates, salts, etc. 13,342. April 30.

Isherwood, P. C. C. Preparation and isolation of aromatic oxyaldehydes. 13,067. April 28.

Metallges. Akt.-Ges. Production of alkali phosphates. 13,161. April 29. (Germany, February 1.)

— Purifying aqueous liquids. 13,449. May 1. (Germany, June 29, 1929.)

Soc. d'Etudes et Réalisation Eréal Soc. Anon. Cracking hydrocarbons. 13,215. April 29. (Belgium, April 30, 1929.)

Soc. of Chemical Industry in Basle. Heating device. 13,182. April 29. (Switzerland, April 29, 1929.)

— Filter presses. 13,409. May 1. (Germany, May 1, 1929.)

Twemlow, A. Y. Colouring cellulose esters, etc. 12,996. April 28.

Vernon, H. W. Preparation and isolation of aromatic oxyaldehydes. 13,067. April 28.

Wittouck, S. Manufacture of alkali carbonates, salts, etc. 13,342. April 30.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID, CHROMIC.—1s. 0d. per lb. d/d U.K.
 ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.
 ACID NITRIC, 80° Tw.—Spot £20 to £25 per ton, makers' works according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 6os. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA (ANHYDROUS).—Spot, 1od. per lb., d/d in cylinders.
 AMMONIUM BICHROMATE.—8d. per lb. d/d U.K.
 BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.
 BLEACHING POWDER, 35%.—Spot, £7 10s. per ton d/d station in casks, special terms for contracts.
 BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £12 10s. per ton; powder, £14 per ton. (Packed in 1 cwt. bags carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards.)
 CALCIUM CHLORIDE (SOLID).—Spot, £4 15s. to £5 5s. per ton d/d in drums.
 CHROMIUM OXIDE.—9d. and 10d. per lb. according to quantity d/d U.K.
 CHROMETAN.—Crystals, 3d. per lb. Liquor, £18 15s. per ton d/d U.K.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall. pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—4d. per lb. nett d/d U.K. spot; ground 4d. per lb. extra.
 POTASSIUM CHLORATE.—3d. per lb., ex-wharf, London, in cwt. kegs.
 POTASSIUM CHROMATE.—8d. per lb. d/d U.K.
 SALAMMONIAC.—Firsts lump, spot, £42 10s. per ton d/d station in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.
 SALT CAKE, UNGROUND.—Spot, £3 7s. 6d. per ton d/d station in bulk.
 SODA ASH, 58° E.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.
 SODA CAUSTIC, SOLID, 76/77%.—Spot, £14 10s. per ton, d/d station.
 SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2 cwt. bags.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.
 SODIUM BICHROMATE CRYSTALS.—3d. per lb. nett d/d U.K. spot. Anhydrous 4d. per lb. extra.
 SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.
 SODIUM CHLORATE.—2d. per lb.
 SODIUM CHROMATE.—3d. per lb. d/d U.K.
 SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.
 SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.
 SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.
 SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d address in bags.
 SODIUM SULPHIDE CONC. SOLID.—Spot, £10 5s. per ton d/d in drums. Crystals—Spot, £7 10s. per ton d/d in sellers' casks.
 SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton, d/d station in kegs. Commercial—Spot, £9 per ton, d/d station.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7d. to 7d. per lb. Crude 60's, 2s. 5d. April-June, 2s. 4d. July-Dec. per gall.
 ACID CRESYLIC 99/100.—2s. 2d. to 2s. 6d. per gall. Pale, 5s. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Pale, 95%, 1s. 9d. to 1s. 10d. per gall. 98%, 2s. 2d. to 2s. 2d. Dark, 1s. 6d. to 1s. 9d. Refined, 2s. 7d. to 2s. 10d. per gall.
 ANTHRACENE.—A quality, 2d. to 2d. per unit. 40%, £4 10s. per ton.
 ANTHRACENE OIL, STRAINED, 1080/1090.—4d. to 5d. per gall. 1100, 5d. to 6d. per gall.; 1110, 6d. to 6d. per gall. Unstrained (Prices only nominal).
 BENZOLE.—Prices at works: Crude, 1od. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 9d. to 1s. 11d. per gall.; Pure, 1s. 11d. to 2s. 3d. per gall.
 TOLUOLE.—90%, 1s. 9d. to 2s. 1d. per gall. Firm. Pure, 1s. 11d. to 2s. 5d. per gall.
 XYLOL.—1s. 5d. to 1s. 10d. per gall. Pure, 1s. 8d. to 2s. 1d. per gall.
 CREOSOTE.—Cresylic, 20/24%, 6d. to 7d. per gall.; Heavy, for Export, 6d. to 6d. per gall. Home, 4d. per gall. d/d. Middle oil, 4d. to 5d. per gall. Standard specification, 3d. to 4d. per gall. Light gravity, 1d. to 1d. per gall. ex works. Salty, 7d. per gall.

Naphtha

NAPHTHA.—Crude, 8d. to 8d. per gall. Solvent, 90/160, 1s. 3d. to 1s. 3d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 6d. per gall. Solvent 90/190, 1s. to 1s. 2d. per gall.

Naphthalene

NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £4 10s. per ton. Hot pressed, £8 per ton.

NAPHTHALENE, CRYSTALS.—Crystals, £12 5s. per ton. Purified Crystals, £14 10s. per ton. Flaked, £14 to £15 per ton, according to districts.

Pitch

PITCH.—Medium soft, 40s. to 47s. 6d. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 3s. 9d. to 4s. per gall. 90/160, 3s. 6d. to 3s. 9d. per gall. 90/180, 1s. 9d. to 2s. 3d. per gall. Heavy prices only nominal.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. per lb. 100%.
 ACID BENZOIC.—1s. 8d. per lb.
 ACID GAMMA.—3s. 9d. per lb. 100% d/d buyer's works.
 ACID H.—2s. 3d. per lb. 100% d/d buyer's works.
 ACID NAPHTHONIC.—1s. 6d. per lb. 100% d/d buyer's works.
 ACID NEVILLE AND WINTHROP.—2s. 7d. per lb. 100% d/d buyer's works.
 ACID SULPHANILIC.—8d. per lb. 100% d/d buyer's works.
 ANILINE OIL.—8d. per lb., drums extra, d/d buyer's works.
 ANILINE SALTS.—8d. per lb. d/d buyer's works.
 BENZALDEHYDE.—1s. 8d. per lb., packages extra, d/d buyer's works.
 BENZIDINE BASE.—1s. 2d. per lb. 100% d/d buyer's works.
 BENZOIC ACID.—1s. 8d. per lb. d/d buyer's works.
 o-CRESOL 30/31° C.—£3 1s. 10d. per cwt., in 1 ton lots.
 m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots d/d.
 p-CRESOL 32/34° C.—2s. 9d. per lb., in ton lots d/d.
 DICHLORANILINE.—1s. 10d. per lb.
 DIMETHYLANILINE.—1s. 9d. per lb., drums extra d/d buyer's works.
 DINITROBENZENE.—8d. per lb.
 DINITROCHLOROBENZENE.—£74 per ton d/d.
 DINITROTOLUENE.—48/50° C., 7d. per lb.; 66/68° C., 9d. per lb.
 DIPHENYLAMINE.—1s. 8d. per lb. d/d buyer's works.
 a-NAPHTHOL.—1s. 11d. per lb. d/d buyer's works.
 B-NAPHTHOL.—£65 per ton in 1 ton lots, d/d buyer's works.
 a-NAPHTHYLAMINE.—1s. per lb. d/d buyer's works.
 B-NAPHTHYLAMINE.—2s. 9d. per lb. d/d buyer's works.
 o-NITRANILINE.—5s. 11d. per lb.
 m-NITRANILINE.—2s. 6d. per lb. d/d buyer's works.
 p-NITRANILINE.—1s. 8d. per lb. d/d buyer's works.
 NITROBENZENE.—6d. per lb., 5-cwt. lots, drums extra, d/d buyer's works.
 NITRONAPHTHALENE.—9d. per lb.
 R. SALT.—2s. per lb. 100% d/d buyer's works.
 SODIUM NAPHTHONATE.—1s. 6d. per lb. 100% d/d buyer's works.
 o-TOLUIDINE.—8d. per lb., drums extra, d/d buyer's works.
 p-TOLUIDINE.—1s. 9d. per lb. d/d buyer's works.
 m-XYLIDINE ACETATE.—3s. 1d. per lb. 100%.
 N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey, £16 10s. to £17 10s. per ton. Liquor, 9d. per gall.

ACETONE.—£78 per ton.

CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

WOOD CREOSOTE.—1s. 9d. per gall., unrefined.

WOOD NAPHTHA, MISCELL.—3s. 8d. to 3s. 11d. per gall. Solvent, 4s. to 4s. 3d. per gall.

WOOD TAR.—£3 10s. to £4 10s. per ton

BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 3d. to 1s. 5d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 8d. to 1s. 10d. per lb.

BARYTES.—£5 10s. to £7 per ton, according to quality.

CADMIUM SULPHIDE.—5s. to 6s. per lb.

CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity.

CARBON BLACK.—4 1/2 d. to 4d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.

DIPHENYLGUANIDINE.—3s. 6d. per lb.

LITHOPONE, 30%.—£20 to £22 per ton.

SULPHUR.—£9 10s. to £13 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP.—B.P.—£55 to £60 per ton.

ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£37 per ton, ex wharf London, barrels free.

ACID, ACETYL SALICYLIC.—2s. 9d. to 2s. 11d. per lb., according to quantity.

ACID, BENZOIC B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.

ACID, BORIC B.P.—Crystal, £32 per ton; powder, £36 per ton; For one ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 7d. to 1s. 8d. per lb., less 5%.

ACID, GALLIC.—2s. 11d. per lb. for pure crystal, in cwt. lots.

ACID, MOLYBDIC.—5s. 3d. per lb. in $\frac{1}{2}$ cwt. lots. Packages extra. Special prices for quantities and contracts.

ACID, PYROMELIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.

ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 8d. per lb. Technical.—1s. to 1s. 2d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 2 $\frac{1}{2}$ d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—7s. 9d. to 8s. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.

AMMONIUM MOLYBDATE.—4s. 9d. per lb. in $\frac{1}{2}$ cwt. lots. Packages extra. Special prices for quantities and contracts.

ATROPHINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.

BISMUTH CARBONATE.—7s. 6d. per lb.

BISMUTH CITRATE.—7s. 6d. per lb.

BISMUTH SALICYLATE.—7s. 3d. per lb.

BISMUTH SUBNITRATE.—6s. 6d. per lb.

BISMUTH NITRATE.—Cryst. 5s. per lb.

BISMUTH OXIDE.—9s. 6d. per lb.

BISMUTH SUBCHLORIDE.—1s. 6d. per lb.

BISMUTH SUBGALLATE.—7s. 3d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 11 $\frac{1}{2}$ d. per lb.; 12 W. Qts. 10d. per lb.; 36 W. Qts. 6d. per lb.

BORAX B.P.—Crystal, £21 per ton; powder, £22 per ton; For one ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.

BROMIDES.—Ammonium, 1s. 10d. per lb.; potassium, 1s. 5 $\frac{1}{2}$ d. per lb.; granular, 1s. 4 $\frac{1}{2}$ d. to 1s. 5 $\frac{1}{2}$ d. per lb.; sodium, 1s. 8d. per lb. Prices for 1 cwt. lots.

CALCIUM LACTATE.—B.P., 1s. 2 $\frac{1}{2}$ d. to 1s. 3d. per lb., in 1-cwt. lots.

CAMPHOR.—Refined flowers, 3s. 3d. to 3s. 4d. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. to 3s. 4d. per lb.

CHLOROFORM.—2s. 4 $\frac{1}{2}$ d. to 2s. 7 $\frac{1}{2}$ d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. 730—11d. to 1s. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.

GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 5d. per lb.; potassium, 2s. 8 $\frac{1}{2}$ d. per lb.; sodium, 2s. 7 $\frac{1}{2}$ d. per lb., in 1 cwt. lots, assorted.

IRON AMMONIUM CITRATE.—B.P., 2s. 5d. per lb. for 28 lb. lots. Green, 3s. 1d. per lb. U.S.P., 2s. 4d. to 2s. 7d. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8 $\frac{1}{2}$ d. to 8 $\frac{1}{2}$ d. per oz., according to quantity.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2 $\frac{1}{2}$ %; Heavy commercial, £21 per ton, less 2 $\frac{1}{2}$ %; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 17s. per lb. net; Synthetic, 9s. 6d. to 11s. 9d. per lb.; Synthetic detached crystals, 9s. 6d. to 11s. per lb., according to quantity; Liquid (95%), 9s. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots. Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. mng., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 3d. to 1s. 5d. per lb.

METHYL SULPHONAL.—18s. 6d. to 20s. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—3s. 9d. to 4s. 1d. per lb.

PHENAZONE.—5s. 11d. to 6s. 1 $\frac{1}{2}$ d. per lb.

PHENOLPHTHALEIN.—5s. 6d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—97s. per cwt., less 2 $\frac{1}{2}$ per cent.

POTASSIUM CITRATE.—B.P.C., 2s. 3d. per lb. in 28 lb. lots. Smaller quantities 1d. per lb. more.

POTASSIUM FERRICYANIDE.—1s. 7 $\frac{1}{2}$ d. per lb., in 125 lb. kegs.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5 $\frac{1}{2}$ d per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—43s. 6d. per lb.

SALOL.—2s. 3d. to 2s. 6d. per lb.

SODIUM BENZOATE B.P.—1s. 9d. per lb. for 1-cwt. lots.

SODIUM CITRATE, B.P.C., 1911, AND U.S.P. VIII.—1s. 11d. per lb., B.P.C. 1923, and U.S.P. IX.—2s. 3d. per lb. Prices for 28 lb. lots. Smaller quantities 1d. per lb. more.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPROUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. 2d. per lb. Crystal, 1s. 11d. to 2s. 3d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—1od. to 1s. 1d. per lb.

SODIUM SULPHIDE, ANHYDROUS.—£27 10s. to £29 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—9s. 6d. to 10s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 1s. 9d. to 1s. 10d. per lb. THYMOL.—Puriss, 8s. 3d. to 9s. 2d. per lb., according to quantity. Firmer. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—12s. per lb.

AMYL ACETATE.—2s. 6d. per lb.

AMYL BUTYRATE.—5s. per lb.

AMYL CINNAMIC ALDEHYDE.—12s. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—6s. 6d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—13s. 3d. per lb.

COUMARIN.—12s. per lb.

CITRONELLOL.—10s. per lb.

CITRAL.—8s. per lb.

ETHYL CINNAMATE.—6s. 6d. per lb.

ETHYL PHTHALATE.—2s. 9d. per lb.

EUGENOL.—9s. 6d. per lb.

GERANIOL (PALMAROSA).—20s. per lb.

GERANIOL.—7s. 6d. to 10s. per lb.

HELIOTROPINE.—6s. 6d. per lb.

ISO EUGENOL.—11s. 9d. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—9s. 6d. per lb.

RHODINOL.—46s. per lb.

SAFROL.—2s. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN, EX CLOVE OIL.—13s. 6d. to 15s. per lb. Ex Guaiacol, 12s. 6d. to 13s. 9d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. per lb.

ANISE OIL.—4s. 3d. per lb.

BERGAMOT OIL.—10s. 9d. per lb.

BOURBON GERANIUM OIL.—18s. per lb.

CAMPHOR OIL, WHITE.—160s. per lb.

CANANGA.—Java, 9s. 6d. per lb.

CASSIA OIL 80/85%.—4s. 9d. per lb.

CINNAMON OIL LEAF.—7s. 9d. per oz.

CITRONELLA OIL.—Java, 2s. 8d. per lb., c.i.f. U.K. port; pure, Ceylon, 2s. 8d. per lb.

CLOVE OIL (90/92%).—7s. 3d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 9d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, 11s. 6d. per lb.

LEMON OIL.—5s. per lb.

LEMONGRASS OIL.—4s. per lb.

ORANGE, SWEET.—11s. per lb.

PEPPERMINT.—Wayne County, 14s. per lb.; Japanese, 6s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, May 8, 1930.

BUSINESS generally has been brighter during the past week, with prices mainly firm, with the exception of metals. Export business is also improving.

General Chemicals

ACETONE.—Firm at £71 10s. to £80 per ton, according to quantity.

ACETIC ACID.—In good demand at £36 10s. for the technical 80% and £37 10s. per ton for 80% edible.

ACID CITRIC.—Still rather slow at about 1s. 9d. per lb., less 5%.

ACID LACTIC.—Firm at £42 per ton for 50% by weight pale quality, and in steady request.

ACID OXALIC.—Unchanged and firm at £30 7s. 6d. to £32 per ton, according to quantity, and in regular demand.

SULPHATE OF ALUMINA.—Unchanged and firm at £8 to £8 15s. per ton for the 17-18% iron free quality.

ARSENIC.—Quiet at about £15 15s. per ton, free on rails at mines.

CREAM OF TARTAR.—Prices are a little easier at about 90s. per cwt.

COPPER SULPHATE.—£21 10s. per ton, free on rails London.

FORMALDEHYDE.—In steady demand at about £33 10s. per ton.

LEAD ACETATE.—Lower at £40 5s. per ton for white and £39 5s. per ton for brown.

LEAD NITRATE.—Quiet at about £33 per ton.

LITHOPONE.—£19 15s. to £23 per ton, according to grade and quantity, with a steady demand.

CARBONATE OF POTASH.—Firm at £27 per ton for 96-98%.

PERMANGANATE OF POTASH.—Firm at 5½d. per lb. for B.P. quality, and in regular demand.

SODIUM BICHROMATE.—Firm at 3½d. per lb., and in good request.

SODIUM HYPO SULPHITE PHOTOGRAPHIC CRYSTALS.—The increased demand continues, with price firm at £14 15s. per ton. Commercial at £8 10s. to £9 per ton.

SULPHIDE OF SODIUM.—Unchanged.

Nitrogen Fertilisers Market

Sulphate of Ammonia.—*Export.*—The demand for sulphate in most countries is commencing to show the normal seasonal decline. The market does not appear to be so firm but quotations have not been reduced below £7 15s. per ton, f.o.b. U.K. ports, in single bags. *Home.*—Merchants in the south-west area report that the season is a late one and purchases continue unabated. There is no sign of a falling off in demand in the Midlands or the North. Prices remain unchanged.

Nitrate of Soda.—Increased deliveries and reduced production have combined to diminish the stock of this product. Supplies in sight, however, are sufficient to meet the requirements for the next six months. Proposals before the Chilean Parliament to rationalise the industry have been received favourably. It seems likely that this will come into operation, and production will be concentrated in the more efficient oficinas with a consequent strengthening of competitive power.

Latest Oil Prices

LONDON, May 7.—LINSEED OIL was quiet, and 7s. 6d. to 2s. 6d. per ton lower. Spot, ex mill, £41; May, £38 7s. 6d.; May-August, £37 17s. 6d.; and September-December, £36 17s. 6d., naked. RAPE OIL was inactive. Crude, extracted, £38; and technical, refined, £39 10s., naked, ex wharf. COTTON OIL was barely steady. Egyptian crude, £29; refined, common edible, £34; and deodorised, £36, naked, ex mill. TURPENTINE was dull at 6d. per cwt. decline. American, spot, 39s. 6d.; June, 39s.; July-December, 39s. 3d.; Russian, spot, 36s. 9d.

HULL.—LINSEED OIL.—Spot and May, £39 10s.; May-August, £38 10s.; September-December, £37 10s. per ton, naked. COTTON OIL.—Egyptian, crude, spot, £28 10s.; edible, refined, spot, £31 10s.; technical, spot, £31 5s.; deodorised, spot, £33 10s. per ton, naked. PALM KERNEL OIL.—Crude, 5½ per cent., spot, £31 10s. per ton, naked. GROUNDNUT OIL.—Crushed, extracted, spot, £33; deodorised, spot, £37 per ton. SOYA OIL.—Extracted and crushed, spot, £30; deodorised, spot, £38 10s. per ton. RAPE OIL.—Crushed-extracted, spot, £33 10s.; refined, spot, £38 10s. per ton. TURPENTINE.—Spot, 42s. 6d. per cwt. CASTOR OIL and COD OIL unchanged.

South Wales By-Products

THERE is very little change in South Wales by-product activities, the situation being decidedly unsatisfactory and the indications for the immediate future poor. Pitch remains in poor demand, patent fuel manufacturers and other big users buying very little.

TARTAR EMETIC.—Quiet at about 11d. per lb.

ZINC SULPHATE.—Unchanged at about £13 per ton.

Coal Tar Products

Prices for coal tar products still remain unchanged. There is a slightly better enquiry, but no big business seems to be passing.

MOTOR BENZOL.—Quoted at about 1s. 5½d. to 1s. 6½d. per gallon f.o.r.

SOLVENT NAPHTHA.—Unchanged at about 1s. 2½d. to 1s. 3d. per gallon f.o.r.

HEAVY NAPHTHA.—Remains at about 1s. 1d. per gallon f.o.r.

CREOSOTE OIL.—Unchanged, at 3d. to 3½d. per gallon f.o.r. in the North, and at 4d. to 4½d. per gallon in London.

CRESYLIC ACID.—Quoted at 2s. per gallon for the 98/100% quality, and at 1s. 10d. per gallon ex works for the dark quality 95 97%.

NAPHTHALENE.—The firelighter quality is quoted at £3 10s. to £3 15s. per ton, the 74 70 quality at £4 to £4 5s. per ton, and the 70/78 quality at about £5 per ton.

PITCH.—Remains at a nominal figure of 45s. to 47s. 6d. per ton, f.o.b. East Coast Port.

The following additional prices have been received:—

Carbolic Acid.—Unchanged at prices previously reported, namely 7d. to 7½d. per lb.

Acetyl Salicylic Acid B.P.—Prices remain unchanged at 2s. 9d. to 2s. 11d. per lb., according to quantity.

Methyl Salicylate.—1s. 3d. to 1s. 5d. per lb., according to quantity.

Phenophthalein.—5s. 11d. to 6s. 1½d. per lb.

Phenacetin.—No change to report, prices ranging from 3s. 9d. to 4s. 1d. per lb.

Vanillin.—Whilst there are some remarkably low prices for Guaiacol material, general levels for clove oil material are unchanged at 14s. for 1 cwt. lots. Smaller quantities, 14s. 3d. to 14s. 6d. per lb.

Supplies are well in excess of demand and quotations range round about 45s. per ton delivered. Heavy naphtha has a poor call, but solvent is in moderate demand. Quotations for both products are unchanged. Refined tars have a slightly better call, with quotations for gasworks and coke oven tar unchanged. Sulphate of ammonia has only a moderate call. Motor benzol continues to have a bright steady demand, but creosote has only a small call. Patent fuel and coke exports remain unsatisfactory. Patent fuel prices for export are:—22s. to 22s. 6d., ex ship Cardiff; 21s., ex ship Newport; and 21s. to 21s. 6d., ex ship Swansea. Coke prices of all grades are unchanged ex ship all South Wales ports. Oil imports into Swansea over the four weeks period ending April 29th amounted to 7,168,055 gallons.

Scottish Coal Tar Products

THE market is suffering from lack of orders, and quotations reflect the general position. All items, excepting benzol and carbolics, are easy at previous levels.

Cresylic Acid.—Quotations are easy as follows:—Pale 99/100%, 1s. 10½d. to 1s. 11½d. per gallon; pale 97/99%, 1s. 9½d. to 1s. 10½d. per gallon; dark 97/99%, 1s. 8½d. to 1s. 9½d. per gallon; high boiling acid is changing hands at about 1s. 9d. to 1s. 11d. per gallon; all f.o.r. makers' works.

Carbolic Sixties.—There is a good demand for all available supplies and value remains firm at about 2s. 4d. to 2s. 6d. per gallon for ordinary quality, ex works.

Creosote Oil.—In very poor call. Specification oil, 3d. to 3½d. per gallon; gas works ordinary, 2½d. to 3½d. per gallon; washed oil, 3d. to 3½d. per gallon; all free on rails makers' works in bulk.

Coal Tar Pitch.—There are some inquiries for shipment next season but no actual business is yet reported. The export price is nominal at 47s. 6d. per ton, f.a.s. Glasgow, while home value is in the neighbourhood of 50s. to 52s. 6d. per ton, f.o.r. works.

Blast Furnace Pitch.—The local demand is spasmodic. Controlled prices remain unchanged at 30s. per ton, f.o.r. works for home trade and 35s. per ton f.a.s. Glasgow for export.

Refined Coal Tar.—is marking time and quotations are easy at about 3½d. to 4d. per gallon filled into buyers' packages at works.

Blast Furnace Tar.—Unchanged at 2½d. per gallon.

Crude Naphtha.—The value is about 4d. to 4½d. per gallon, ex makers' works.

Water White Products.—Solvent 90/160 and heavy 90/190 are easy at about 1s. 2d. to 1s. 3d. per gallon and 1s. 2d. per gallon respectively, and stocks are increasing, but motor benzole is firm at about 1s. 6d. to 1s. 6½d. per gallon, all in bulk, ex makers' works.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.

Glasgow, May 7, 1930.

THE Scottish heavy chemical market during the past week has, as we anticipated, shown signs of improvement, although not to any great extent. Inquiries for home consumption have been more pronounced than those for export. There are no important changes in prices to report.

Industrial Chemicals

ACETONE, B.G.S.—£71 10s. to £80 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID ACETIC.—This material is still scarce for immediate supply, but prices remain unchanged as follows:—98/100% glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports. 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton; powder, £32 per ton, packed in bags, carriage paid U.K. stations. There are a few fairly cheap offers made from the Continent.

ACID CARBOLIC, ICE CRYSTALS.—Quoted 8d. per lb., delivered.

ACID CITRIC, B.P. CRYSTALS.—Quoted 2s. per lb., less 5% ex store, prompt delivery. Rather cheaper offers for early delivery from the Continent.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy; dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC, 80° QUALITY.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer at same price—viz., 3d. per lb., ex store. Offered from the Continent at 3d. per lb., ex wharf.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality, £5 15s. per ton for 168°. Dearsenicated quality 2s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 1s. 4d. per lb., less 5%, ex wharf. On offer for prompt delivery from the Continent at 1s. 4d. per lb., less 5% ex wharf.

ALUMINA SULPHATE.—Quoted at round about £7 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 7s. 6d. per ton, c.i.f. U.K. ports. Crystal meal about 2s. 6d. per ton less.

AMMONIA, ANHYDROUS.—Quoted 7d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton, powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 88%.—Unchanged at about 2d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture, quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Rather easier, and spot material now obtainable at round about £34 per ton, ex wharf. On offer for prompt shipment from China at about £30 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Quoted £18 per ton, ex wharf, prompt dispatch from mines. Spot material still on offer at £19 15s. per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £11 per ton, c.i.f. U.K. ports. For Continental material our price would be £10 per ton, f.o.b. Antwerp or Rotterdam.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 12s. 6d. per ton, delivered in minimum 4-ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 15s. per ton to £5 5s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Now quoted £35 per ton, ex store. Continental material now on offer at about £34 per ton, ex wharf.

GLAUBER SALTS.—English material quoted 4s. 10s. per ton, ex station. Continental on offer at about £3 5s. per ton, ex wharf.

LEAD, RED.—Price now £37 10s. per ton, delivered buyer's works.

LEAD, WHITE.—Quoted £37 10s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted round about £39 to £40 per ton, ex wharf. Brown on offer at about £2 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store, in moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—Spot material on offer at £26 10s. per ton, ex store. Offered from the Continent at £25 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99½/100%.—Powder quoted £25 10s. per ton, ex wharf. Crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted at 7d. per lb., ex store. Offered for prompt delivery from the Continent at about 6d. per lb., ex wharf.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3d. per lb., delivered buyers' premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality 27s. 6d. per ton extra. Light soda ash £7 13s. per ton, ex quay, minimum 4-ton lots, with various reductions for contracts.

SODIUM CAUSTIC.—Powdered, 98/99%, £17 10s. per ton, in drums, £18 15s. per ton in casks. Solid, 76/77%, £14 10s. per ton in drums; £14 12s. 6d. per ton for 70/72% in drums, all carriage paid buyers' stations, minimum 4-ton lots. For contracts 10s. per ton less.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots. Prices for this year unchanged.

SODIUM NITRATE.—Chilean producers are now offering at £10 2s. per ton, carriage paid buyers' sidings, minimum 5-ton lots, but demand in meantime is small.

SODIUM PRUSSIATE.—Quoted 5d. per lb., ex store. On offer at 5d. per lb., ex wharf, to come forward.

SODIUM SULPHATE (SALTCAKE).—Prices 55s. per ton, ex works; 57s. 6d. per ton, delivered, for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption. Solid, 60/62%, £9 15s. Broken, 60/62%, £10 15s. per ton. Crystals, 30/32%, £7 17s. 6d. per ton, all delivered buyers' works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £9 5s. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE, 98%.—British material offered at round about £20 per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £10 per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

New Plant at South Cave Sand Quarries

THE new plant erected at the South Cave Moulding Sand Quarries, in which General Refractories, Ltd., of Sheffield, and the Yorkshire Amalgamated Products, Ltd., of Doncaster, are jointly interested, was opened by the Lord Mayor of Hull on Friday, May 2. One of the most modern plants in the country for the milling, mixing and disintegrating of sand has been installed, and the sand produced will prove of service to the foundries of Hull in particular and of Yorkshire and the neighbouring counties generally. Many grades and mixtures of varying strength can be prepared. There are two excellent deposits of sand, one a strong bonded loam and the other a silica sand which can be mixed to any consistency required and to suit any foundry.

Visitors at the opening ceremony saw the plant actually working and sand as quarried was milled and disintegrated and then loaded into trucks, the whole operation being automatic after the placing of the sand itself in the mills. Several grades were produced, each guaranteed to be absolutely regular and reliable without any of those variations of quality which are so great a source of trouble to foundrymen. After the sand has been carefully selected and mixed, it is well milled, and conveyed in buckets on a mechanised elevator to a shoot, whence it is deposited direct into the trucks. The sand, which belongs to the Upper Jurassic beds, has a face 40 ft. in depth and covers 30 acres.

Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, May 8, 1930.

No one on the chemical market here during the past week has been at all enthusiastic as to the state of business, and complaint generally relates to the relative smallness of the individual orders. There is a moderate flow of delivery specifications against old contract commitments, although in this respect, of course, the movement of many of the leading lines of chemicals is adversely affected by the continued unsatisfactory conditions in the textile and allied industries

Heavy Chemicals

The demand for chlorate of soda this week has been only on a moderate scale, with offers at about £26 per ton. A quietly steady business has been reported in the case of bichromate of soda, values of which are well maintained on the basis of 3½d. per lb., less 1 to 2½ per cent. Caustic soda is fairly active considering general conditions at the consuming end, and contract prices are firm at from £12 15s. to £14 per ton, according to grade. Bicarbonate of soda, also, is well held on a contract basis of £10 10s. per ton, and a moderate business is being put through. The demand in the case of saltcake is on quiet lines, with current offers at from about £2 15s. to £3 per ton. Alkali is steady and meets with a fair inquiry at about £6 per ton. No more than a quiet trade is being done in phosphate of soda which, however, keeps reasonably steady at round £11 10s. per ton for the dibasic quality. Buying interest in the case of sulphide of sodium is on the quiet side, but at about £9 15s. per ton for the 60-65 per cent. concentrated solid quality and round £8 per ton for the commercial kind there has been little change in the price position compared with a week ago. Hyposulphite of soda is in moderate request and values are held at from £15 to £15 10s. per ton for the photographic quality and round £9 for the commercial.

Permanganate of potash this week has been rather a quiet section of the market and prices are steady at about 5½d. per lb. for the B.P. grade and 5d. for the commercial. A fair trade continues to be reported in respect of yellow prussiate of potash, offers of which are well held at from 6½d. to 7½d. per lb., according to quantity. Carbonate of potash is in rather quiet call, and prices are perhaps not too strong at round £26 per ton. Offers of chlorate of potash range from about £26 to £27 per ton, but buying interest in this material is on the quiet side. Bichromate of potash is firm and in fair inquiry at 4d. per lb. With regard to caustic potash, this is in moderate request at about £31 per ton.

A weak tendency is noticeable still in the case of arsenic, but at about £15 15s. per ton at the mines for white powdered, Cornish makes, prices are not quotably changed on balance; sales this week have been far from satisfactory. Sulphate of copper is in quiet demand with prices very uncertain in tendency at from £24 to £25 per ton, f.o.b. The lead products are easy and not too active at about £38 per ton for white acetate and £37 for brown, with nitrate on offer at from £31 to £32. Acetate of lime is maintained at about £7 5s. per ton for the brown quality and £15 for the grey, though buying interest in this section is on rather a restricted scale.

Acids and Tar Products

Citric acid is attracting a moderate amount of attention and at 1s. 8½d. to 1s. 8½d. per lb. there has been little further alteration in the price position. Tartaric acid is on the quiet side, with offers to-day at round 1s. 2½d. per lb. With regard to oxalic acid, buying interest is slow and quotations are down to about £1 12s. per cwt., ex store. Acetic acid continues to meet with a fair volume of inquiry at firm prices, the glacial quality being quoted at £66 per ton and the commercial 80 per cent. strength at about £36 10s.

For the most part, the demand for the by-products is inactive and in more than one section the tendency is easy. Pitch is slow and nominal on the basis of 47s. 6d. per ton, f.o.b. There is not much business going through in creosote oil, offers of which are down to 3½d. to 4½d. per gallon, naked, according to grade. Solvent naphtha is in moderate request at 1s. 2½d. per gallon. In the case of carbolic acid, trade is quiet at the moment, with crude 60's at about 2s. 5d. per gallon, naked, and crystals at 7d. to 7½d. per lb.

Trade Directories

Silk and Rayon Buyers' Guide

THE 1930 edition of the *Silk and Rayon Directory and Buyers' Guide* (John Heywood, Ltd., Deansgate, Manchester, 21s. net), has undergone a further considerable increase in size rendered necessary by the ever-growing number of firms using rayon yarns in the manufacture of both knitted and woven fabrics. The list of the world's rayon producers has been brought up to date and more information about the different companies is provided. An analysis of the producing companies shows that there are now 129 firms producing viscose rayon, 33 firms producing acetate, 18 cuprammonium, and 9 nitro-cellulose yarns. The world's production of rayon in 1929, it is estimated, reached 403,000,000 lb. The great variety of goods into the manufacture of which rayon and silk enters is indicated by the fact that it has been necessary to add 160 new sections in revising the *Guide*. The very useful alphabetical list of firms has been retained, and the list of trade names in current use considerably extended. There has also been compiled from trade sources an alphabetical list of all the trade names of yarns, fabrics, and garments.

Chemical Manufacturers' Directory

The *Chemical Manufacturers' Directory* (Simpkin Marshall, Ltd., 4s. 6d. net), which has now reached its 62nd edition, is an old and handy friend of the chemical trade. It is well indexed both as regards advertisements and other contents, and chemical products are in useful classifications. Telephone numbers and telegraphic addresses of firms in London and the provinces, together with their distances from railway stations, provide a mass of information of the utmost value, particularly in view of the nature of many chemical products. Similar details are provided separately for firms in Scotland and Ireland.

Textile Recorder Year Book

The latest developments in the textile world are contained in the 1930 *Textile Recorder Year Book*, edited by John Brooks (John Heywood, Ltd., Deansgate, Manchester, 7s. 6d. net). Several new features have been added, including two dealing with rayon, and others on the method of establishing Trade Marks, new cotton sections, and many tables of statistics. A six-page addition has been made to the section on humidification and ventilation, and smaller additions in other sections, while the hosiery section has been entirely re-written in order to cover changes that have taken place in knitting machine practice. The figures covering world trade have been revised, and in the list of cotton yarn and cloth exports average prices for the years 1900-1929 are given for the first time, showing a remarkable advance since the war.

Paper Makers' Directory

No changes have been found necessary in the general character of the latest edition of the *Directory of Paper Makers of Great Britain and Ireland* (Marchant Singer and Co., 47, St. Mary Axe, London, E.C., 5s. net), which has, however, been carefully revised. In the trade designation section no fewer than 140 additions have been made to Actual Watermarks and over 450 to trade names.

United States Chemical Merger

THE merger of two leading U.S. chemical and printing-ink concerns, the Newport Co. and the International Printing Ink Corporation, into one company, with combined assets of over \$25,000,000 (£5,000,000), was announced on Saturday. The International Printing Ink Corporation, whose activities extend to England, the Argentine and China, is the largest American manufacturer of printing inks and allied products. In addition to nine manufacturing plants in the United States, it controls, through a British subsidiary, Ault and Wiborg, Ltd., a similar plant in London. The Newport Co. controls one of the most widely diversified organic chemical enterprises in the United States, operating three manufacturing plants, which produce 375 different chemical products. Through its European connections, extensive colour research facilities will be made available to a printing-ink concern. The wood distillation division of the Newport Co. will not be included in the merger. It is understood that Mr. A. A. Schlesinger, president of the Newport Co., and Mr. John M. Tuttle, President of the International Printing Ink Corporation, will become chairman and president respectively.

Company News

LEEDS FIRECLAY CO.—Dividend warrants have been posted for the interim dividend of 6 per cent. on the preference shares and 4 per cent. on the ordinary shares.

GOODLASS WALL AND CO.—The directors have declared an interim dividend of 7½ per cent. on the ordinary shares in respect of the year 1929-30.

ALLEN-LIVERSIDGE.—A dividend at the rate of 6½ per cent. annum, less tax, is announced on the preference shares for the six months ended April 30, 1930.

BRITISH MATCH CORPORATION.—The directors propose to pay a dividend of 4 per cent. (actual), free of tax, on the ordinary shares, making 6 per cent. (actual), free of tax, for the year, payable on May 15.

BRITISH ALKALOIDS.—The first report for the period October 23, 1928, to February 28, 1930, shows a net profit of £1,381. After payment of a dividend of 4 per cent. on the 8 per cent. preference shares, there is £327, which is carried forward.

TURNER AND NEWALL, LTD.—An interim dividend of 5 per cent. is announced on the ordinary shares. The directors state that the increase from 2½ per cent. is made solely for the purpose of lessening the disproportion between the old interim and final dividends, and is not to be considered as an indication that the total distribution for the year will be increased.

ASSOCIATED LEAD MANUFACTURERS.—For the year 1929 a trading profit of £146,568 is announced. After providing for various allocations, the directors recommend that the rate of dividend to be paid on the ordinary share capital in respect of the year ended December 31 last be the same as that paid in the previous year, namely, 2½ per cent., less tax. This will absorb £29,489, leaving a balance of £26,097 to be carried forward.

ERINOID.—The profits for the half year to February 28 are stated to have slightly exceeded those for the half-year to February 28, 1929. The balance sheet and accounts will be made up to July 31. The accounts of Erinoid Société Anonyme, which are made up to December 31, will be submitted at a meeting in Paris next month. The directors of Société have recommended a final dividend at the rate of 5 per cent., making 10 per cent. for the year.

CRAIG AND ROSE.—After providing for directors' fees, income tax and depreciation, the profits for the year to March 31, 1930, amount to £11,530, out of which the directors have written down investment account by £1,400, leaving £10,130, to which is added balance brought forward, £6,886, making £17,016. The directors recommend a dividend on the preference shares, £5,000, a dividend on the ordinary shares at the rate of 5 per cent. per annum, free of tax, requiring £5,000, leaving to be carried forward £7,016.

AMERICAN I.G. CHEMICAL CORPORATION.—The net income for the first fiscal year—eleven months ended March 31, 1930—amounted to \$2,088,442, according to the company's first annual report. Total income for the period amounted to \$3,786,562.55, from which were deducted general and administrative expenses and taxes amounting to \$229,790 and interest on debentures amounting to \$1,468,329. Income, before providing for debenture interest, but after deducting all other charges, including taxes, was \$3,556,771, or about two and a half-times the amount necessary for the payment of debenture interest.

NITRATE RAILWAYS, LTD.—The profits for the year 1929 show a considerable improvement, states the directors' report, and the available balance is nearly £50,000 higher than 1928, this sum going to the benefit of the reserve. The gross receipts amounted to £828,211, and the net receipts to £271,382. Adding to the net receipts, the balance of £82,385 brought forward, balance of interest, etc., exchange and transfer fees, the total is £397,537. Against the net revenue account have been charged balance of income tax, etc., £21,544, expenditure on new buildings £13,918, and appropriations of £50,000 to reserve and £50,000 to amortisation account. After making these charges, there remains £262,074. After payment of dividends, there remains £88,194 to be carried forward.

I.G. FARBENINDUSTRIE (GERMAN DYE TRUST).—The annual report states that the net profit for the year 1929 was

RM.104,600,000, against RM.118,450,000 in 1928. The directors propose a dividend of 12 per cent. (as in 1928 and 1927), and a bonus of 2 per cent., making 14 per cent. for the year. The sum of RM.70,100,000 is allocated to depreciation account, against RM.71,780,000 the previous year. The pensions fund receives RM.5,000,000, and the amount carried forward is RM.5,460,000. The report states that in consequence of the passage of the law concerning the recovery of German property in America, the company received RM.21,060,000, tax free, and from this sum is paying the bonus of 2 per cent.

ZINC CORPORATION.—A circular to shareholders states that the annual general meeting of the company has been postponed until mid-July, in order that Mr. W. S. Robinson, the managing director, who is at present engaged on important investigations in Australia, may be present at the meeting. The directors have declared a participating dividend of 2s. per share, less income tax, on both the preference and ordinary shares, making total distributions out of the profits of 1929 of 7s. 6d. per share on the preference shares and 3s. 6d. per share on the ordinary shares, and a dividend of 2s. per share, less income tax, on the preference shares, being the first half of the fixed preferential dividend for 1930. These dividends will be payable on June 16, 1930, and the rate of tax to be deducted will be announced later.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

NEW ZEALAND.—The Post and Telegraph Department, Wellington, are calling for tenders, to be presented by June 24, for the supply and delivery of hydrometers. (No. P. and T. 151/2284). Ref. B.X. 6377.

MALTA.—A firm of general import and export merchants in Valletta desire to obtain the sole representation, on a commission basis, for sale on consignment of British refiners or exporters of soya bean oil. Reference No. 345.

Tariff Changes

DENMARK.—Customs and Excise duties leviable on alcoholic liquids have been amended by Law No. 82, effective as from March 22. Fusel oil, raw or purified, aso, amyl, butyl and propyl alcohol and methyl alcohol have now an import duty of 0.60 Kr. per kilog (instead of 0.65 Kr.); other spirituous liquids in bottles, demijohns, stone bottles and jars with a capacity of 2 litres or less, under 50 per cent. alcoholic content by volume, 1.50 Kr. (instead of 1.10 Kr.), otherwise 3 Kr.

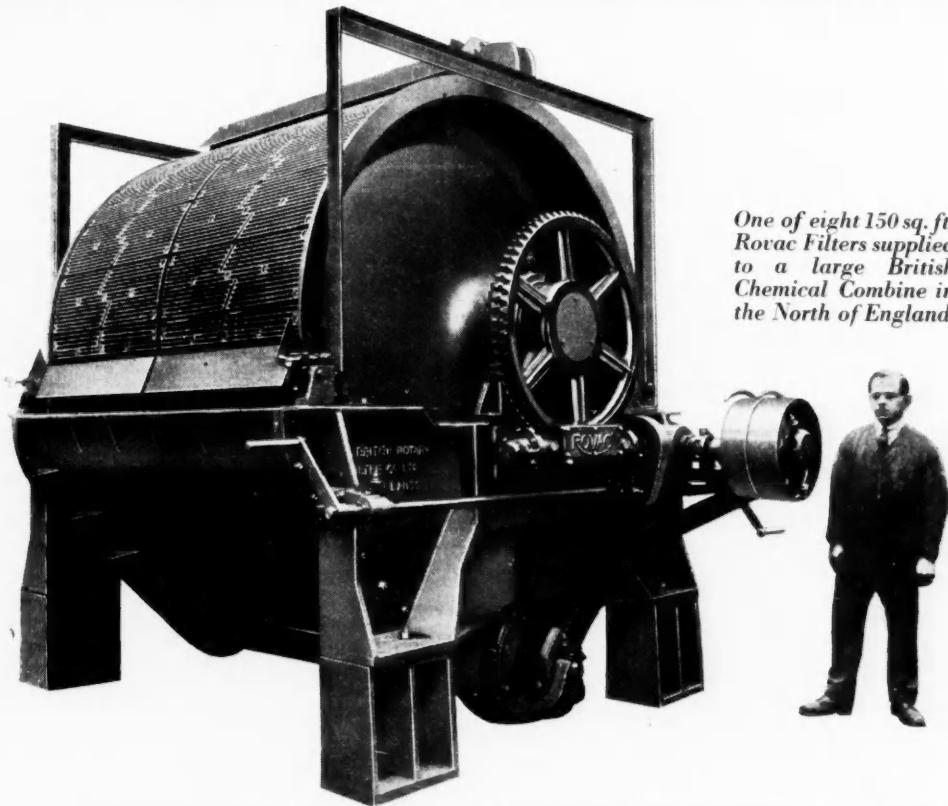
KENYA.—The importation is forbidden of trade spirits of every kind, and beverages mixed with these spirits; and distilled beverages containing essential oils or chemical products which are recognised as injurious to health, such as thuyone, star anise, benzoic aldehyde, salicylic esters, hyssop and absinthe.

SYRIA.—All solid fats imported into Syria are to be subject to analysis by the Customs chemist. Solid fats and fish oils which are required by local soap works, and the import of which may be permitted, are to be denatured with malachite green under conditions to be fixed in each case by the Customs chemist, who is to examine the product before and after denaturation.

New Trial of Lever Action

THE new Trial ordered in the action brought by Lever Brothers, Port Sunlight, and the Niger Company against Mr. Ernest Hyslop Bell and Mr. Walter Edward Snelling, formerly chairman and vice-chairman respectively of the Niger Company, was opened in the King's Bench Division on Tuesday and again adjourned. The plaintiffs allege that the defendants abused their trust by entering into buying and selling transactions with regard to cocoa, which was one of the chief commodities in which the Niger Company dealt. The defence is a denial of the allegations, except that there was an admission that the defendants did make a profit of £1,360 in respect of certain dealings in cocoa.

ROVAC ROTARY FILTERS



*One of eight 150 sq. ft.
Rovac Filters supplied
to a large British
Chemical Combine in
the North of England.*

THE Rovac Filter is the outcome of many years' extensive practical experience and study of the subject of continuous automatic filtration, the present model being superior in design and construction to any similar machine yet produced.

Our Works Laboratory is equipped with a complete Rovac Filter Plant, and we gladly carry out filtration tests on an industrial scale for those interested.

The Rovac Filter is particularly suitable for the following industries:—

Chemical Works
Beet and Cane Sugar Works
Bleach and Dye Works
Tanneries
Collieries
Potteries
Municipal Waterworks

Manure Works
Food Works
Wool Washeries
Patent Fuel Works
Metallurgical Plants
Paper Mills
etc., etc.



11, Southampton Row, London, W.C.1.

Works: Derby & Erith.

TELEPHONE :
HOLBORN 7277 (3 LINES)

TELEGRAMS & CABLES :
HARDRAYMILL WESTCENT LONDON

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

RAWSONS, LTD., 629, Smithdown Road, Liverpool, wholesale chemists. (C.C., 10/5/30.) £10 15s. 2d. March 6.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

COMPRI-VENA, LTD., London, W., drug manufacturers, etc. (M., 10/5/30.) Registered April 25, series of £2,000 B debentures, present issue £1,000; general charge. *£2,500. August 10, 1929.

UNITED CHINA CLAY CO., LTD., London, E.C. (M., 10/5/30.) Registered April 24, £4,000 2nd debentures; general charge. *£17,500. May 22, 1929.

Satisfaction

SANITAS CO., LTD., London, E., disinfectant manufacturers. (M.S., 10/5/30.) Satisfaction registered April 17, £20,000, registered October 4, 1904.

London Gazette, &c.

Company Winding Up Voluntarily

ANTIMONY PRODUCTS AND CHEMICAL CO., LTD. (C.W.U.V., 10/5/30.) By reason of its liabilities, April 25. E. James, St. Lawrence House, Trump Street, King Street, London, E.C.2, chartered accountant, nominated as liquidator.

Bankruptcy Information

SAPER, Lewis, manufacturing chemist, 5-9, White Lion Street, Bishopsgate, London, E.1 (R.O., 10/5/30.) Receiving order, May 1. Creditor's petition. First meeting, May 14, 11.30 a.m., and public examination, June 17, 11 a.m., Bankruptcy Buildings, Carey Street, London, W.C.2.

Partnerships Dissolved

ADSHEAD AND GEESON (Thomas GEESON and Edward Egerton ADSHEAD), dyers, bleachers and finishers, Green Street Dyeworks, Macclesfield, as from April 30, 1930, so far as concerns E. E. Adshead, who retires from the firm. Debts received and paid by T. Geeson, who will continue the business.

SELLERS ODDY AND CO. (John ODDY and Thomas Ernest SELLERS), aniline colour merchants, Brook Street, Huddersfield, by mutual consent as from May 2, 1930. Debts received and paid by J. Oddy, who will carry on the business.

New Companies Registered

GENERAL METALLURGICAL AND CHEMICAL, LTD., 278, Finsbury Pavement House, London, E.C.2.—Registered May 2. Nominal capital £8,000 in £1 shares. Merchants, traders, dealers, shippers, importers and exporters of all kinds of produce and merchandise. Directors: E. C. Chalas, T. P. Geoffroy.

REDDISH CHEMICAL CO., LTD.—Registered May 3. Nominal capital £5,000 in £1 shares. To acquire the business of manufacturing chemists carried on by W. Hipkins and I. Harrop, at Reddish, as the Reddish Chemical Co. Directors:

W. Hipkins, 16, Bryn Drive, South Reddish, Stockport, and I. Harrop.

YOUNG AND SHAW LABORATORIES (NEWCASTLE-ON-TYNE), LTD., Customs House Buildings, Quayside, Newcastle-on-Tyne.—Registered May 2. Nominal capital £50 in 10s. shares. Analysts, chemists, metallurgists, etc. Directors: H. J. Young and G. Shaw.

Manufacturing Chemists' Winding Up

THE statutory first meetings of the creditors and shareholders of Matthews and Wilson, manufacturing chemists, 78, Old Broad Street, E.C., were held at the offices of the Board of Trade, Carey Street, W.C., on April 30. The company had carried on business at Portland Road, South Norwood, and at Mill Street, Dockhead, but latterly at 6-8, Cole Street, Borough, S.E.

Mr. J. Barwick Thompson (official receiver) presided. The winding up order was made on March 31, and an approximate statement of affairs had been prepared showing gross liabilities £5,783, of which £3,322 are expected to rank. The total assets were valued at £4,495, and, after deducting £759 for preferential claims and £1,700 in respect of debenture claims, the net assets were estimated at £2,036. The paid up capital is £16,000, and there is an estimated total deficiency of £17,285. A receiver who had been appointed by the debenture holder had stated that the assets should realise about £1,000 more than the figure shown (£4,495) if he could sell the business as a going concern.

The company's failure was attributed by the directors to various causes, including the loss approximately of £1,300 sustained as the result of litigation in 1927-28; burden of repayment of moneys advanced at a time when the company was hampered by lack of capital; restricted credit during the past few years, and general trade depression during the past 18 months.

The liquidation was left in the hands of the Official Receiver.

Shipment of Chemicals

Birmingham Chamber of Commerce Protests

BIRMINGHAM Chamber of Commerce decided at a meeting on Monday to make representation to the Shipping Conference protesting against the high freights now in operation for chloroform shipped to North America and also against existing difficulties with regard to shipments of dangerous chemicals and inflammable spirits to Karachi, and pressing for arrangements with the Bombay Port authorities to allow the transmission of this traffic in British vessels. The committee's report stated that it was understood that the English shipping lines in some instances refused to accept consignments for delivery via Karachi when there was insufficient traffic to warrant a call at that port in consequence of certain restrictions imposed by the Bombay Port Authorities which prohibited the retention of inflammable materials aboard whilst the vessels were discharging or loading inside the port. As a consequence it was necessary for such consignments to be forwarded via Antwerp and Continental Lines, an unsatisfactory arrangement.

May and Baker, Ltd.

To provide protection for their clients against reductions in the price of bismuth salts, May and Baker, Ltd., manufacturing chemists, of Battersea, London, announce that should they reduce the prices of bismuth salts the purchaser will be protected in the price (applicable to the quantity) on any delivery of not less than 28 lb., which has been made within fourteen days of such price reduction, provided that he undertakes not to pass on this protection, or any part of it, to his own customers on any deliveries under 28 lb. that may have been effected within fourteen days of such price reduction. This protection will only apply to contracts that are not overdue for delivery under the terms of sale.

The same firm announces reductions in the prices of sodium tartrate and potassium B.P. (reduced 5s. per cwt.), Seidlitz powder B.P. (reduced 3s. 9d. per cwt.), potassium citrate B.P., sodium citrate B.P.C., iron citrate and ammon. B.P. (reduced 3d. per lb.), iron citrate and quinine B.P. (reduced 1d. per oz.).

